



OKLAHOMA
Education

2021 OKLAHOMA EDUCATOR SUPPLY & DEMAND REPORT

*Assessing shortages, disparities and opportunities in the labor
market for public school teachers, counselors and principals*

2021 Oklahoma Educator Supply & Demand Report

Assessing shortages, disparities and opportunities in the labor market for public school teachers, counselors and principals

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Education Policy Research & Evaluation
Oklahoma State Department of Education

December 2021

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Executive Summary

Over the past decade, Oklahoma's public schools endured budgetary cuts that led to teacher shortage implementation strategies leaving the teaching profession less attractive. Due to two consecutive pay raises for public schools' certified personnel during 2017-18 and 2018-19, workforce growth was restored. In response to the World Health Organization's announcement that the COVID-19 outbreak was a pandemic, however, a statewide school closure was declared in March of 2020, disrupting more than 700,000 and 54,000 Oklahoma learners and educators, respectively, thus causing the teaching workforce growth to lessen.

The Elementary and Secondary Schools Emergency Relief (ESSER) funds awarded to State and local educational agencies to address the impact of the pandemic provided a unique opportunity to make investments and build capacity to mitigate learning loss and improve and sustain effective teaching and learning. However, whether the recurring educator shortage problem can be mitigated, and existing inequalities, inequities and achievement gaps can be dismantled, are still open questions and their outcome depends very much on how priorities for the allocation of the relief funds are identified –e.g., quantifying need for services and support and implementing cost-effective, high-impact strategies–; how quick investments occur; and how much effective monitoring and evaluation are implemented. Although it is still too early to see the effects the emergency funds will have –funds can be spent through September 30, 2023–, data and experience revealed that the teaching workforce can be highly responsive to economic factors such as pay raises and investments.

The 2021 Oklahoma Educator Supply & Demand Report focuses on data trends for several key variables of educator demand and supply that highlight the dynamics of the teaching workforce, before and during the pandemic, and provides the constructed datasets as a useful and timely benchmark for future analyses of the impact of the three rounds of the COVID-19 relief funds. The document evaluates the depth of the excess demand separately for teachers, counselors and principals in the past several years, which is an innovative feature in this type of report, partly in response to a specific request made in late 2020 by some Institutions of Higher Education with Principal Preparation Programs in the state in relation to the status of school principal supply and demand.

The demand-side factors assess trends in student enrollment and educator-pupil ratios in the aggregate, by primary position and by relevant school-level characteristics. The report also

analyzes educator turnover and retention to better understand the trends in the number of educators who leave public school teaching every year, those who move to a different role/school and the reasons behind their decisions and the importance of the ability to keep educators employed in the public school system as a complement to the turnover analysis. The supply-side factors present the analysis of two main variables, i.e., new and continuing educators, also referred to as stayers. The report also portrays a fundamental source of new hires such as recent graduates of teacher preparation programs, or graduates from prior years, some of whom having teaching experience. It also evaluates the fluctuations of the current and past teaching force by identifying its overall trends and composition, including educator demographics, qualifications and likelihood of job diversification. The changes seen in the demand for teachers over the past few years can have a detrimental effect on education preparation programs enrollment, completion rates and the proportion of college graduates entering the teaching profession. Finally, differences across subgroups and several school-level characteristics, including school level, urban-centric locale classification, race and ethnicity composition, low-income school status and English learners' population participation are investigated and tested using statistical analysis.

The data show a sharp decline in the total enrollment in public schools in 2020-21, reversing the previous positive trend of the past seven years. However, enrollment in grades 9 to 12, virtual schools, mid-high poverty schools and of English learners continued its steady growth even during the COVID-19 pandemic. The average pupil-teacher ratio for the state shows a consistent downward trend after 2016-17, reaching some 16 students per teacher in 2020-21. Across years, pupil-teacher ratios increased as the schools' poverty concentration levels decreased and as their urbanicity status increased. Subjects such as science & STEM, social studies, language arts and mathematics in middle school are listed among the top 10 with the largest average class sizes. The turnover rate for teachers in 2020-21 was about 3 percent lower than the rate in the previous year. Unlike all other components of teacher turnover, retirement increased between 2019-20 and 2020-21 in terms of both quantity and rate. Among all primary positions, middle school science & STEM had the second highest turnover rate at 31 percent in 2020-21. Teacher turnover is highest in schools in cities and in schools with high concentration of low-income students. While the turnover rate for counselors was also lower in 2020-21 than in 2019-20, principal turnover continued to drop. A larger than usual percentage of first-year

teachers returned to teaching in 2020-21. Furthermore, the retention rate for counselors remained about the same during the COVID-19 pandemic years and the rate for principals continued to grow. The retention rate for teachers, counselors and principals are highest for educators who hold standard or multiple certificates.

The report finds that despite the drop in the number of public-school teachers in 2016-17 due to major state funding cuts and again in 2020-21 due to the COVID-19 pandemic, the teaching workforce in 2020-21 was about 3 percent, or close to 1,200 teachers, higher than in 2012-13. In spite of the overall positive trends, about 10 and 3 percent of schools in 2020-21 did not have a school counselor or principal, respectively. While teacher and principals are increasingly working in multiple schools doing the same job, school counselors are less likely than in the past to work in multiple sites and to hold more than one job. The increasing percentage of new hires on the overall supply of recent years reversed in 2020-21 for all educators. The education workforce is getting younger and more diverse but at a pace slower than that of the students, especially those of Hispanic descent. Pre-pandemic certificate participation rate trends continued in 2020-21, including a decline in the share of teachers, counselors and principals with a standard certificate in total population; a larger percentage of teachers and counselors who were emergency certified; and an increase in the percentage of teachers and principals holding an alternative certificate. Across years, the distribution of certificate areas among Oklahoma teachers has moderately changed, with most of them either improving or keeping their rank; the subject areas with the largest changes in ranking order include Psychology/Sociology (↑), English as a Second Language (↑), Spanish (↑), Grammar/Composition (↓), Learning Disability (↓), Mentally Handicapped (↓), and Oklahoma History (↓). Between 2017-18 and 2020-21, there was a complete shift in graduation trends with the total number of students completing teacher preparation programs in the state increasing, on average, at an annual rate of 3 percent. However, not all graduating institutions experienced the same trend, nor have the trends been consistent across years, educator roles, specializations or academic degrees.

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Acknowledgements

As in the past, this year's *Oklahoma Educator Supply & Demand Report* was prepared under the direction and guidance of Robyn R. Miller, Ed.D, who was at that time Chief Deputy Superintendent of Public Instruction. The author is grateful to all the comments provided by Dr. Miller during the review process, they proved to be invaluable at different stages during the Report's production. The author is also appreciative of the advice from, and helpful discussions about our findings with, Carolyn Thompson, MPA, OSDE Deputy Chief of Staff & Chief of Government Affairs.

The following Oklahoma State Department of Education colleagues provided useful feedback and insight on data issues during the formative stages of this project: Heather Young, SHRM-CP, Director of School Personnel Records; Dawn Williams, Reporting Specialist & EDFacts Coordinator, and Kyle Wang, Senior Database Developer. Special thanks go to Dionne Jordan-Mock, who provided support and assistance.

We are thankful to the Oklahoma State Regents for Higher Education (OSRHE) for providing time series data and information about college graduates with an education degree. Accessing OSRHE's data was a very important contribution to this report.

Lastly, I would like to thank the document preparation, editorial, and graphic support staff of the Communications team: Cory Ingram, Creative Services Director, and Annette Price, M.Ed., Communications and Constituent Services Specialist. Their hard work and attention to detail greatly improved the final version of this report.

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Introduction

While two consecutive pay raises for public schools' certified personnel during 2017-18 and 2018-19 helped to restore workforce growth, the impact of the COVID-19 pandemic has decelerated the positive outlook. Public school education in Oklahoma suffered one of the largest national budget cuts over the past decade. As a result, steep reductions to school budgets occurred forcing administrators to implement strategies to reduce expenses, many of which critically hinder instruction and unequivocally contribute to making the teaching profession less attractive.

The Elementary and Secondary Schools Emergency Relief (ESSER) funds awarded to State and local educational agencies to address the impact of the pandemic provide a unique opportunity to make investments and build capacity to mitigate learning loss and improve and sustain effective teaching and learning. However, whether the deepening educator shortage problem can be mitigated, and existing inequalities, inequities and achievement gaps can be dismantled, are still open questions, and their outcome depends very much on how priorities for the allocation of the relief funds are identified –e.g., quantifying need for services and support and implementing cost-effective, high-impact strategies–; how quick investments occur; and how much effective monitoring and evaluation are implemented. Although it is still too early to see the effects the emergency funds may have –funds can be spent through September 30, 2023–, data and experience revealed that the teaching workforce can be highly responsive to economic factors such as pay raises and investments. Ensuring enough teachers are in the classroom without compromising teaching quality is an additional challenge that the COVID-19 pandemic has compounded.

The 2021 Oklahoma Educator Supply & Demand Report focuses on data trends for several key variables of educator demand and supply that highlight the dynamics of the teaching workforce, before and during the pandemic, and provides the constructed datasets as a useful and timely benchmark for future analyses of the impact of the three rounds of the COVID-19 relief funds. The report is divided into four sections that separately evaluate the depth of the excess demand for teachers, counselors and principals in the past several years, which is an innovative feature in this type of report. Section I describes educator demand and discusses recent trends in key factors including student enrollment, educator-pupil ratios, turnover and retention. Section II focuses on educator supply and identifies its overall trends and composition. Additionally, the

analysis of the disaggregation of the supply by its two main factors, i.e., new and continuing educators (also referred to as stayers) is presented, followed by information about teacher preparation programs, a critical source of educator supply. Section III describes several methodological aspects of the data analysis conducted, including the rationale for why specific procedures were chosen. The appendices present a broad set of educator supply and demand data and indicators that are depicted in the main sections of the report and/or offer detailed results for aggregated data trends presented elsewhere in the report.

Part I: Demand

Much like any other service, the labor market for educators can be explained by the interaction of supply and demand, each influenced by a set of independent and common factors, many of which can change unexpectedly (Santiago, 2002). In the Boe & Gilford (1992) model of the labor market, the demand for public school teachers is formulated in terms of “the total number of teaching positions the local education agencies are able and willing to employ at a given time (p. 24).” In the context of the state of Oklahoma, school districts have the responsibility to determine their teaching positions based on several considerations. This report follows the above definition, and this section discusses in detail two key factors that influence the demand for educators: 1) the number of students enrolled in public schools; and 2) the policies and practices pertaining to educator-pupil ratios and class sizes. Given the mechanical nature, as opposed to behavioral, of the report, as well as data availability considerations, other factors that influence the demand of educators and the interactions among those factors are not comprehensively discussed here. They are, however, mentioned in the report to assist in understanding public educator job market trends and projections.

This section focuses on the demand-side factors, assessing recent trends in student enrollment, educator-pupil ratios, and class sizes in the aggregate, by school level, urban-centric locale classification, race and ethnicity composition, low-income school status, English learners’ population participation, educator primary position, and by a combination of key school-level demographic characteristics. Educator turnover and retention are also examined to better understand the trends in the number of educators who leave public teaching every year and the reasons behind their departure, as well as the trends of those who stay in the profession and their most salient characteristics. Key data analyses carried out for teachers are replicated for two other essential school roles: principals and counselors. The data decomposition by role performed addresses a specific request made in late 2020 by some Institutions of Higher Education with Principal Preparation Programs in the state in relation to the status of school principal supply and demand. Caution is warranted in data interpretation, especially when using raw numbers, since data for school year 2020-21 were still preliminary when the data preparation process for analysis started.

The data show that total enrollment in public schools has experienced a sharp decline in 2020-21, reversing the previous positive trend of the past seven years.¹ Although enrollment trends differed by school level, locale, race & ethnicity, and poverty classification, enrollment in grades 9 to 12, virtual schools, mid-high poverty schools, and of English learners continued its steady growth even during the COVID-19 pandemic. The average pupil-teacher ratio for the state shows a consistent downward trend after 2016-17, reaching some 16 students per teacher in 2020-21. While student-teacher ratios have dropped consistently since 2016-17 in elementary and secondary schools, the estimated ratio in virtual schools has recently increased from 15 in 2019-20 to 21 in 2020-21. Across years, pupil-teacher ratios increased as the schools' poverty concentration levels decreased and as their urbanicity status increased. Except for the relationship across the school poverty classification, similar patterns were observed for the pupil-counselor ratios in the overall and within school level comparisons. Subjects such as *science & STEM*, *social studies*, *language arts*, and *mathematics* in middle schools are listed among the top ten primary positions with the largest average class sizes.

More than one-sixth (18 percent) of public school teachers in 2019-20 did not remain in the same position at the same school the following year—about 3 percent lower than the rate in the previous year. Unlike all other components of teacher turnover, retirement increased between the last two school years in terms of both quantity and rate. Among all primary positions, *MS science & STEM* had the second highest turnover rate at 31 percent in 2020-21. Teacher turnover was found to be highest in schools in cities and in schools with high concentration of low-income students. As with the turnover rate for teachers in 2020-21, the percentage of counselor movers and leavers in 2020-21 was lower than in 2019-20 (18 vs. 20 percent). In spite of the challenges posed by the pandemic, principal turnover in Oklahoma has continued to drop. The average after 3-year teacher retention rate in Oklahoma public schools is 35 percent. *Paraprofessional*, *multiple certificates*, and *standard* are the top three certificate categories with the highest retention rates for teachers. There is a measurable, positive difference between the retention rate of new teachers holding *non-emergency* and *emergency* combined certificates and those with an emergency certificate. A larger than usual percentage of first-year teachers returned to teaching

¹ Using preliminary data for 2021-22, some 698,000 students are enrolled in public schools in kindergarten through grade 12, which is higher than enrollment in 2020-21 (694,113) by a difference of more than 4,000 students, but still lower than the record enrollment in 2019-20 (703,650).

in 2020-21. While the one-year retention rate for counselors remained about the same during the COVID-19 pandemic years, the rate for principals continued to grow. The after 3-year retention rate for both counselors and principals are highest for educators who hold a *standard* or *multiple certificates*.

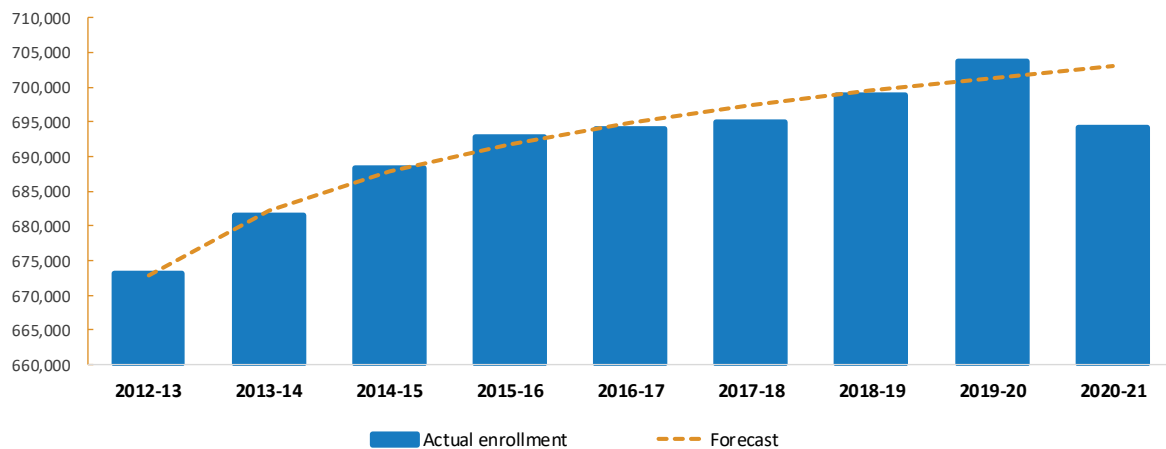
Demand factors

Multiple factors may create a higher or lower demand for teachers from one year to the next, including new policies around educator-pupil ratios, changes in student enrollment, and the number of educators that leave the public school system. Every year, schools face a clientele, i.e., student enrollment, to whom they must provide services. In turn, the size of the clientele depends largely on population and migration shifts, some of which will be analyzed in detail in the *Section: Predictions*. The following paragraphs present and discuss trends in Oklahoma public schools' student enrollment, pupil-educator ratios, turnover and retention in the aggregate, and also disaggregated in ways that more effectively portray the demand for teachers, principals, and counselors and provide answers for detailed policy questions. Data are broken down by school level, urban-centric locale classification, race and ethnicity composition, low-income school status, English learners' population, primary position, and by a combination of some school and student population characteristics.

Enrollment

Figure 1 shows aggregate student enrollment for pre-kindergarten, kindergarten, and grades 1 to 12 from 2012-13 to 2020-21. As expected, the COVID-19 pandemic has created severe disruptions in the education system during the last school years, including a sharp decline in the 2020-21 public school enrollment, reversing a previous trend (i.e., orange dotted line) of an average increase of 4,500 per year between 2012-13 and 2019-20. If the upward trend had continued, the number of students enrolled in public elementary and secondary schools in 2020-21 would have been close to 703,000, or an estimate of at least 9,000 students more (Figure 1).

**Figure 1: Student enrollment in public schools
2012-13 to 2020-21**



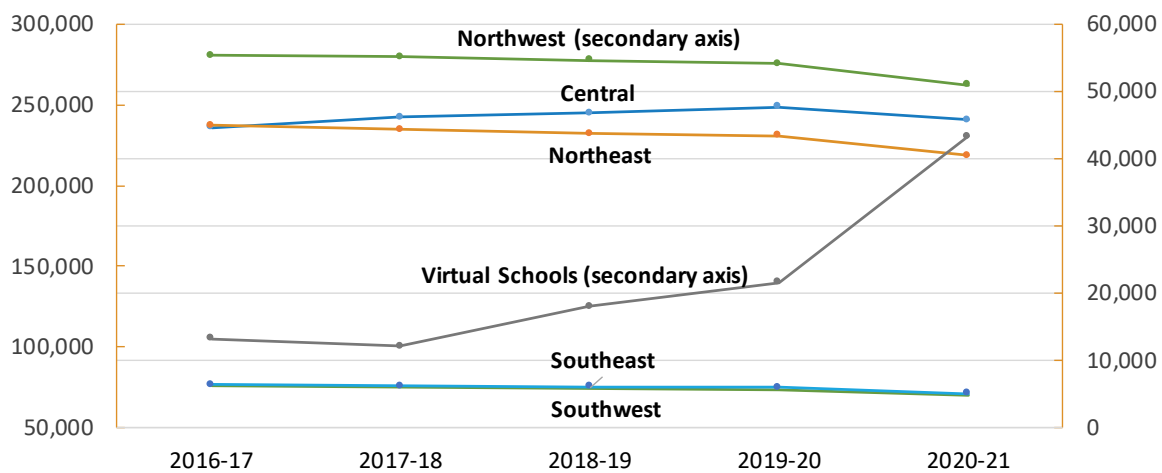
Note: Enrollment headcount includes prekindergarten, kindergarten and grades 1 thru 12. Students with out-of-home placement status are also included. The trendline R-squared value is 0.98. 2020-21 data as of 01/10/2020.

Geographic disparities in enrollment trends are depicted in Figure 2, where statewide virtual schools are added as a separate category. Between 2016-17 and 2020-21, three different trajectories are observed: A positive linear trend in the Central region²—about 4,300 more students per year between 2016-17 and 2019-20— that abruptly changed to a negative one in 2020-21; a downward course that was significantly accelerated by the COVID-19 pandemic for all other regions; and a positive and growing trend for virtual charter schools after 2017-18 – some 2,800 more students per year. The evidence suggests school population in the Northwest region³ in 2020-21 saw the largest decline across all regions (6 percentage points). The complete list of counties by region is listed in Appendix A.

² Counties in Central region: Canadian, Cleveland, Hughes, Lincoln, Logan, Okfuskee, Oklahoma, Pottawatomie, and Seminole.

³ Counties in the Northwest region: Alfalfa, Beaver, Blaine, Cimarron, Dewey, Ellis, Garfield, Grant, Harper, Kay, Kingfisher, Major, Noble, Payne, Texas, Woods, and Woodward.

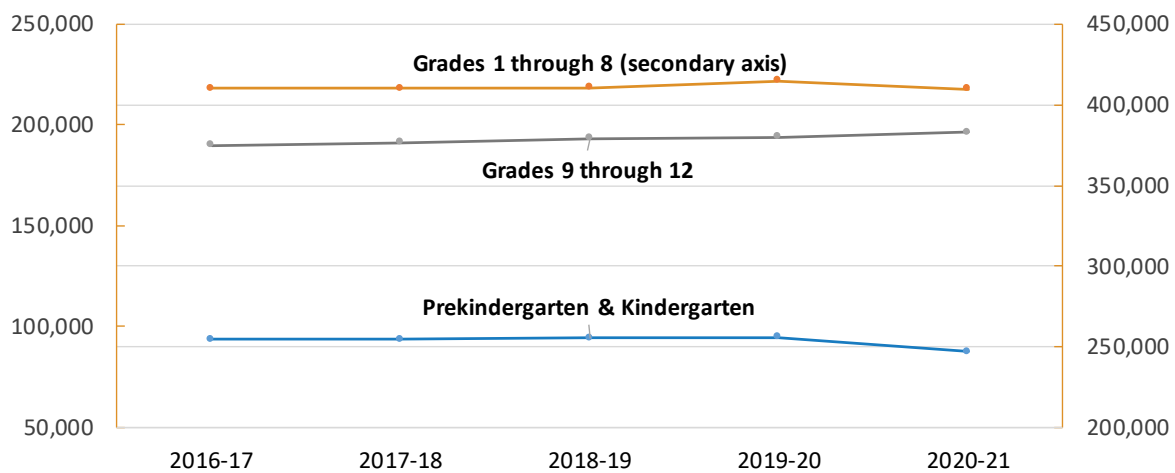
**Figure 2: Student enrollment in public schools by region
2016-17 to 2020-21**



Note: All PK-12 students enrolled in public schools are included, except those attending either the Oklahoma School for the Deaf or the Oklahoma School for the Blind. 2020-21 data as of 01/10/2020.

The decrease in public school enrollment in fall 2020 has not been across-the-board, with one school level category continuing its previous upward trend. While the enrollment for pre-kindergarten and kindergarten saw the highest drop (i.e., from more than 94,000 in 2019-20 to less than 88,000 in 2020-21), and the enrollment for grades 1 to 8 dropped by more than 4,800 students from the previous school year, the enrollment for grades 9 to 12 increased by more than 2,500 students, surpassing the average change of around 1,400 students of recent years (Figure 3).

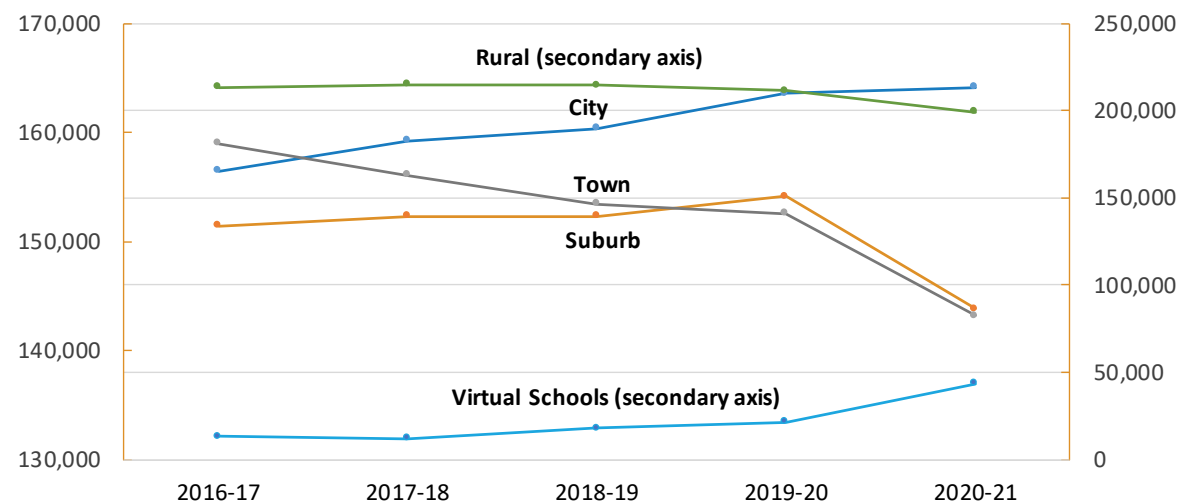
**Figure 3: Student enrollment in public schools by level
2016-17 to 2020-21**



Note: All PK-12 students enrolled in public schools are included, except those attending either the Oklahoma School for the Deaf or the Oklahoma School for the Blind. 2020-21 data as of 01/10/2020.

Changes in public school enrollment between the fall 2019 and fall 2020 semesters also differed by school locale classification. Figure 4 displays enrollment distribution using the NCES locale framework (i.e., city, suburban, town, and rural) and, as before, includes the number of students enrolled in statewide virtual schools, as a separate category (Geverdt, 2015). The terms “statewide virtual schools,” “virtual charter schools,” and “virtual schools” are used interchangeably in this report. While the enrollment in schools located in towns and rural areas suffered an accelerated drop in 2020-21 (i.e., about 9,300 and 12,000 fewer students than the previous year, respectively), continuing the downward trend observed in recent years, public school enrollment growth in suburban areas also turned negative (i.e., from more than 154,000 in 2019-20 to less than 144,000 in 2020-21). The enrollment in the remaining categories continued to grow, with the number of students enrolled in virtual schools increasing more steeply than the previous trend would have anticipated (i.e., these schools added in 2020-21 more than 18,000 students from the previous year). This number confirms another consequence of the pandemic for education, which is the rapid increase in the number of children attending schools that offer full-time virtual education.

Figure 4: Student enrollment in public schools by school urban-centric 4-category locale
2016-17 to 2020-21

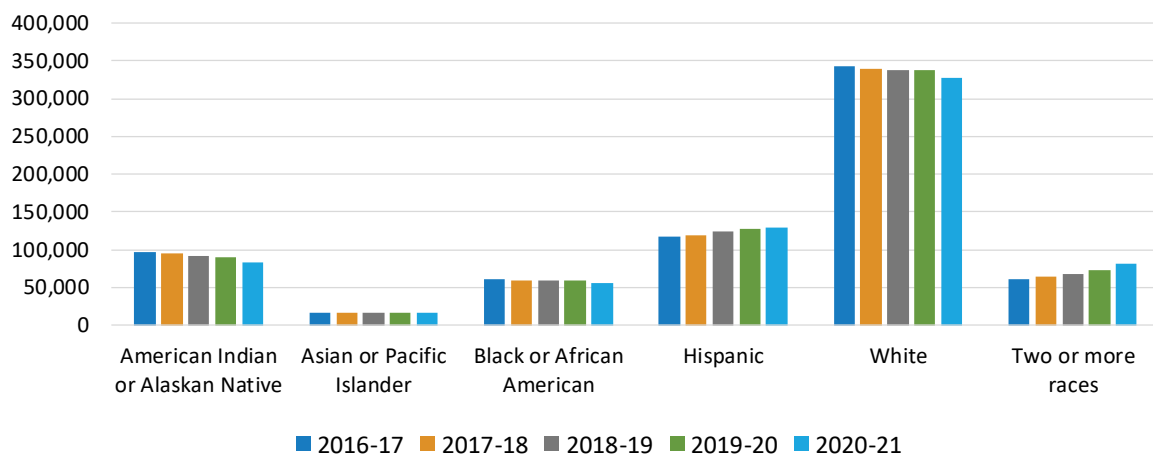


Note: All PK-12 students enrolled in public schools are included, except those attending either the Oklahoma School for the Deaf or the Oklahoma School for the Blind. The urban and rural classifications use the NCES locale framework (2018-19 update as of 01/21/2021). For schools missing the urban-centric locale information, data imputation was used. 2020-21 data as of 01/10/2020.

The racial and ethnic distribution of public school students in Oklahoma has continued the trend observed in recent years and has continued regardless of the COVID-19 pandemic (Figure 5).⁴ Enrollment of Hispanic students and those who are of two or more races has grown from over 116,000 and 60,000, respectively, in fall 2016 to close to 130,000 and 82,000, respectively, in fall 2020. During that time period, Hispanic students went from accounting for about 17 percent to 19 percent of school enrollment; students of two or more races went from making up 9 percent to 12 percent of school enrollment. Enrollment across other racial and ethnic groups has experienced a persistent drop during 2016-17 to 2020-21 –one of two time periods used as a reference in this report. Among them, enrollment for American Indian or Alaskan Native students saw the sharpest decline decreasing 14 percent or an estimate of more than 13,000 students since 2016-17.

⁴ Race and ethnicity in this report is based on self-reported data.

**Figure 5: Student enrollment in public schools by race and ethnicity
2016-17 to 2020-21**



Note: All PK-12 students enrolled in public schools are included, except those attending either the Oklahoma School for the Deaf or the Oklahoma School for the Blind. Racial categories exclude individuals of Hispanic ethnicity. People of Hispanic ethnicity are classified as such regardless of race. 2020-21 data as of 01/10/2020.

The percentage distribution of public school students across races and ethnicities vary widely by locale (Figure 6). In fall 2020, for example, about 28 percent of students who attended city schools were White, compared with 56 and 57 percent of students who attended rural and virtual schools, respectively. In contrast, 36 and 18 percent of students who attended city schools were Hispanic and Black or African American, respectively, which were about four and six times as large as the percentages of such students in rural schools (i.e., 10 and 3 percent, respectively). Similarly, the percentage of students in 2020-21 who were American Indian or Alaskan Native and attended rural schools was considerably higher than the percentage of students who were American Indian or Alaskan Native and attended city schools (20 vs. 4 percent). It is important to note that most of American Indian or Alaskan Native students attend schools located in the Northeast⁵ and Southeast⁶ of the state.

⁵ Counties in the Northeast region: Adair, Cherokee, Craig, Creek, Delaware, Mayes, McIntosh, Muskogee, Nowata, Okmulgee, Osage, Ottawa, Pawnee, Rogers, Sequoyah, Tulsa, Wagoner, and Washington.

⁶ Counties in the Southeast region: Atoka, Bryan, Carter, Choctaw, Coal, Garvin, Haskell, Johnston, Latimer, Le Flore, Love, Marshall, McCurtain, Murray, Pittsburg, Pontotoc, and Pushmataha.

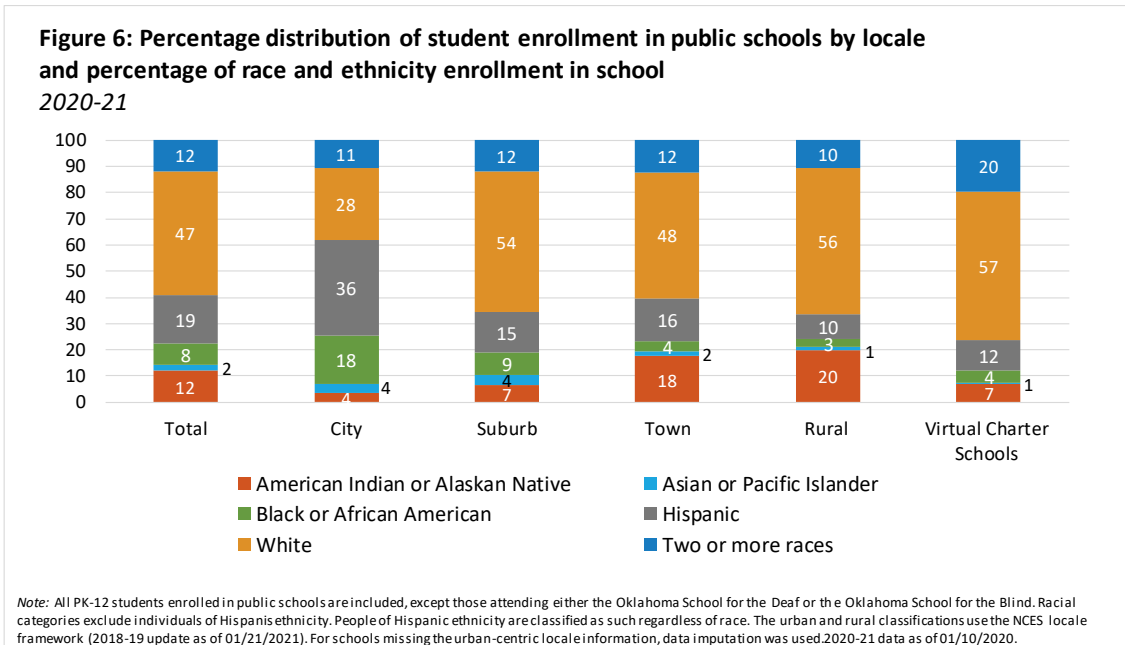
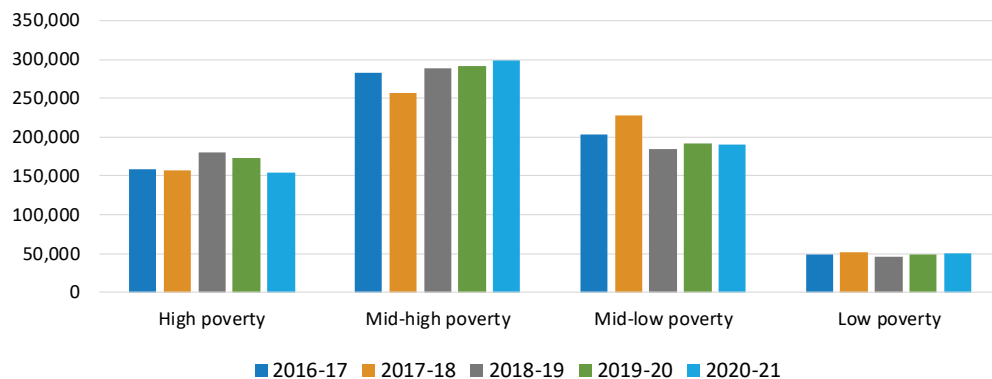


Figure 7 summarizes the enrollment trends of the concentration of low-income students within a public school between 2016-17 and 2020-21. This report uses the percentage of students eligible for free or reduced-price lunch under the National School Lunch Programs to measure school poverty, and the National Center for Education Statistics' classification of schools into one of four categories: High-poverty (more than 75 percent of the student population is eligible for free or reduced-price school meals), mid-high poverty (between 50.1 and 75 percent of the student population is eligible for free or reduced-price school meals), mid-low poverty (between 25.1 and 50 percent of the student population is eligible for free or reduced-price school meals), and low-poverty (25 percent or less of the student population is eligible for free or reduced-price school meals).

Public school enrollment trends across poverty levels varied from 2016-17 to 2020-21. Enrollment in mid-high poverty schools and low poverty schools generally shows an upward trend—after a decrease of 9 percent between fall 2016 and fall 2017 for mid-high poverty schools—, adding each an average enrollment of 4,000 and close to 400 students, respectively, per year. In contrast, and despite a 15 percent rise in 2018-19, enrollment in high poverty schools follows an overall decline, ending the period under analysis with about 3,400 fewer students than in 2016-17. The picture is not so clear for mid-low poverty schools where enrollment was up and down throughout the period with a slight tendency towards a lower enrollment in 2020-21.

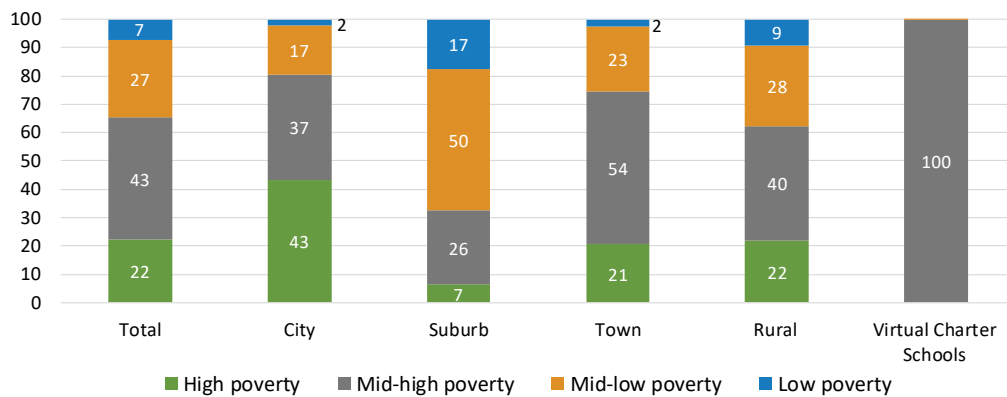
**Figure 7: Student enrollment in public schools by school poverty level
2016-17 to 2020-21**



Note: All PK-12 students enrolled in public schools are included, except those attending either the Oklahoma School for the Deaf or the Oklahoma School for the Blind. Racial categories exclude individuals of Hispanic ethnicity. People of Hispanic ethnicity are classified as such regardless of race. High-poverty schools are defined as public schools where more than 75.0 percent of the students are eligible for free or reduced-price lunch (FRPL); mid-high poverty schools are those where 50.1 to 75.0 percent of the students are eligible for FRPL; mid-low poverty schools are those where 25.1 to 50.0 percent of the students are eligible for FRPL; and low-poverty schools are those where 25.0 percent or less of the students are eligible for FRPL. 2020-21 data as of 01/10/2020.

The concentration of low-income students within a public school also differs by locale. Figure 8 shows the distributions for fall 2020. While the largest concentration of students enrolled in high poverty schools in fall 2020 occurred in city schools (43 percent), the lowest concentration of students enrolled in high poverty schools occurred in suburban schools (7 percent). In turn, the percentage of students who were enrolled in low poverty schools was lowest in town and city schools, representing 2 percent of the total enrollment each. Enrollment in suburban schools in 2020-21 also had the highest shares of student enrollment in both mid-low poverty and low poverty schools (50 and 17 percent respectively).

Figure 8: Percentage distribution of student enrollment in public schools by locale and school poverty level
2020-21

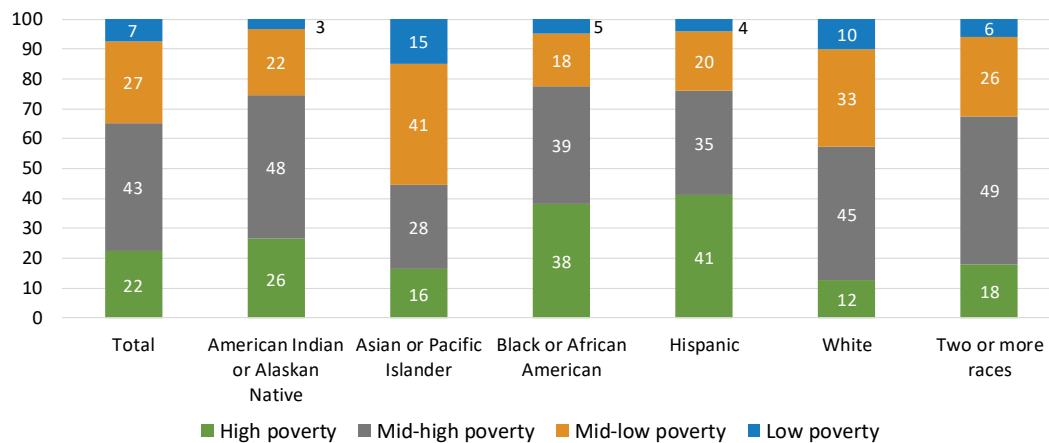


Note: All PK-12 students enrolled in public schools are included, except those attending either the Oklahoma School for the Deaf or the Oklahoma School for the Blind. Racial categories exclude individuals of Hispanic ethnicity. People of Hispanic ethnicity are classified as such regardless of race. High-poverty schools are defined as public schools where more than 75.0 percent of the students are eligible for free or reduced-price lunch (FRPL); mid-high poverty schools are those where 50.1 to 75.0 percent of the students are eligible for FRPL; mid-low poverty schools are those where 25.1 to 50.0 percent of the students are eligible for FRPL; and low-poverty schools are those where 25.0 percent or less of the students are eligible for FRPL. 2020-21 data as of 01/10/2020.

In fall 2020, not only the percentage of students attending high poverty schools was more than three times higher than the percentage of students attending low poverty schools (22 vs. 7 percent), but also both percentages varied widely by race and ethnicity (Figure 9). For example, the percentages of public school students enrolled in high poverty schools were highest for Hispanics and Black or African Americans (41 and 38 percent, respectively), while the percentage of public school students who attended low poverty schools was highest for Asian or Pacific Islanders (15 percent). This racial category also had, in 2020-21, the highest percentage of students enrolled in mid-low poverty schools (41 percent) and the lowest percentage of students enrolled in mid-high poverty schools (28 percent).

While the overall enrollment distribution by poverty level remained barely unchanged since 2016-17, the percentage of students attending high poverty schools has significantly changed for some racial groups (not shown in the figures). For example, between 2016-17 and 2020-21, the rate of Hispanics and Black or African Americans enrolled in high poverty schools increased by 11 (from 30 to 41 percent) and 10 (from 28 to 38 percent) percentage points, respectively. In contrast, there was a decrease in the percentage of students enrolled in high poverty schools who were Asians or Pacific Islanders (from 34 to 26 percent) during this period.

Figure 9: Percentage distribution of student enrollment in public schools by racial and ethnic group and school poverty level
2020-21

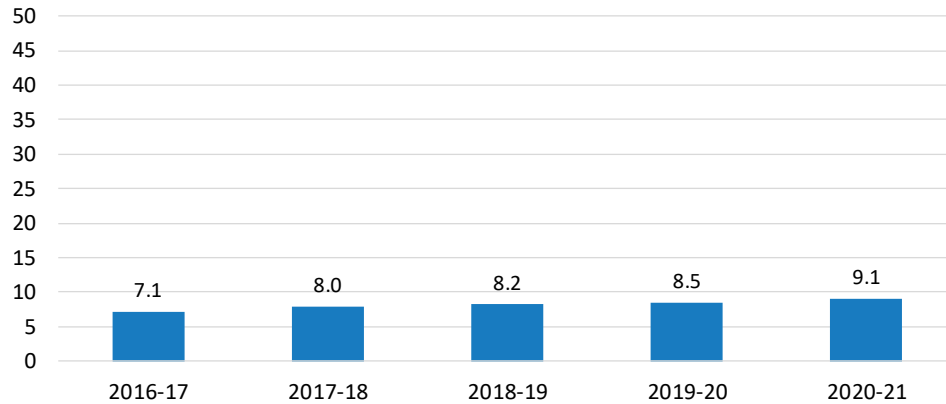


Note: All PK-12 students enrolled in public schools are included, except those attending either the Oklahoma School for the Deaf or the Oklahoma School for the Blind. Racial categories exclude individuals of Hispanic ethnicity. People of Hispanic ethnicity are classified as such regardless of race. High-poverty schools are defined as public schools where more than 75.0 percent of the students are eligible for free or reduced-price lunch (FRPL); mid-high poverty schools are those where 50.1 to 75.0 percent of the students are eligible for FRPL; mid-low poverty schools are those where 25.1 to 50.0 percent of the students are eligible for FRPL; and low-poverty schools are those where 25.0 percent or less of the students are eligible for FRPL. 2020-21 data as of 01/10/2020.

In Oklahoma, students are considered English learners after they are placement-tested with an appropriate English language proficiency assessment (i.e., WIDA assessment), and found to have limited proficiency in English (Oklahoma State Department of Education, n.d.-a).

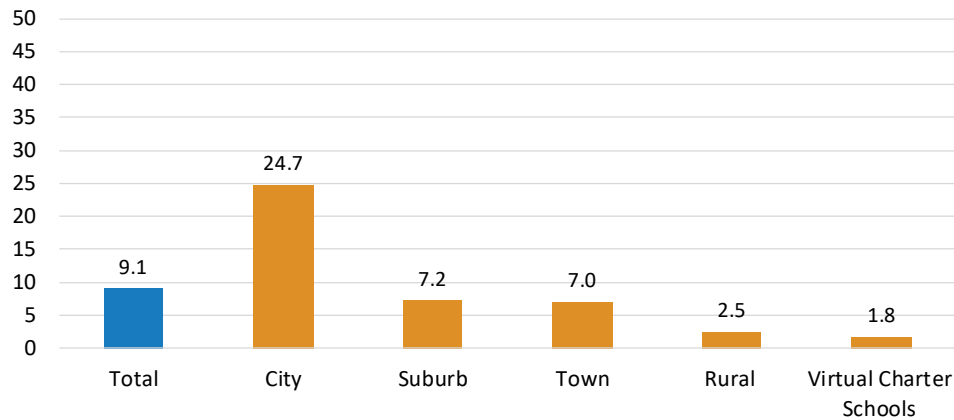
About 63,000 public school students in fall 2020 were English learners (EL) statewide. From 2016-17 to 2020-21, the percentage of public school students who were EL grew by 2 percentage points (7 vs. 9 percent) or an average of 3,300 more students each year (Figure 10). In fall 2020, the largest concentration of EL students existed in city schools (25 percent), followed by suburban and town schools (7 percent each). The percentage of students who were EL in fall 2020 was less than 3 percent in rural and virtual schools (Figure 11).

**Figure 10: Percentage public school students who were English language learners
2016-17 to 2020-21**



Note: All PK-12 students enrolled in public schools are included, except those attending either the Oklahoma School for the Deaf or the Oklahoma School for the Blind. Racial categories exclude individuals of Hispanic ethnicity. People of Hispanic ethnicity are classified as such regardless of race. English Learners status means that the student was placement-tested with an appropriate WIDA assessment and found to have limited proficiency in English. Students must be assessed for English language through the Home Language Survey. Alternately, a student may be identified as EL if district staff observe obvious signs of limited English proficiency in the course of instruction, and the district elects to assess the student with an appropriate WIDA assessment through a student's Home Language Survey and in Oklahoma using for potential EL services. 2020-21 data as of 01/10/2020.

**Figure 11: Percentage of public school students who were English language learners by locale (average)
2020-21**



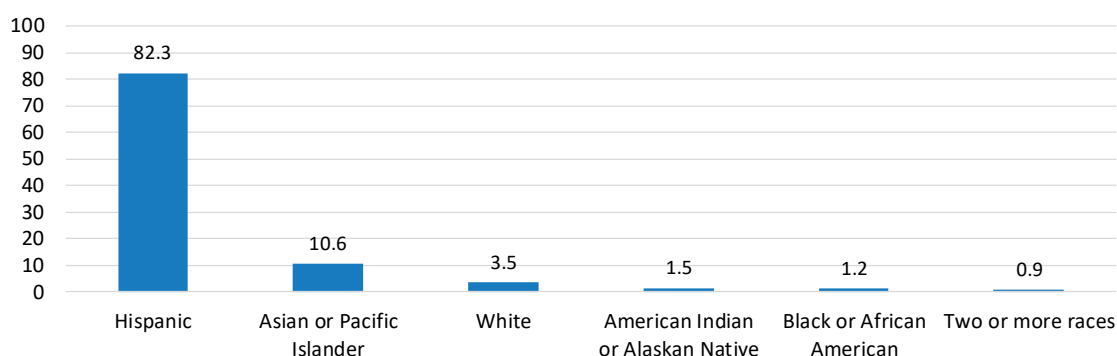
Note: All PK-12 students enrolled in public schools are included, except those attending either the Oklahoma School for the Deaf or the Oklahoma School for the Blind. Racial categories exclude individuals of Hispanic ethnicity. People of Hispanic ethnicity are classified as such regardless of race. English Learners status means that the student was placement-tested with an appropriate WIDA assessment and found to have limited proficiency in English. Students must be assessed for English language through the Home Language Survey. Alternately, a student may be identified as EL if district staff observe obvious signs of limited English proficiency in the course of instruction, and the district elects to assess the student with an appropriate WIDA assessment through a student's Home Language Survey and in Oklahoma using for potential EL services. 2020-21 data as of 01/10/2020.

In fall 2020, there were about 52,000 Hispanic EL public school students representing 82 percent of EL student enrollment overall (Figure 12). Asian or Pacific Islander students were the

next largest racial/ethnic group among EL, with some 6,500 students (11 percent of all EL students). Fewer than 1,000 were identified as EL in each of the other racial/ethnic groups, i.e. American Indian or Alaskan Native (2 percent), Black or African American (1 percent), and two or more races (1 percent). In addition, more than four in five (83 percent) EL students in Oklahoma public schools came from low-income families, defined as those earning below 185 percent of the federal poverty line.

Figure 12: Percentage of public school students who were English language learners by race & ethnicity

2020-21



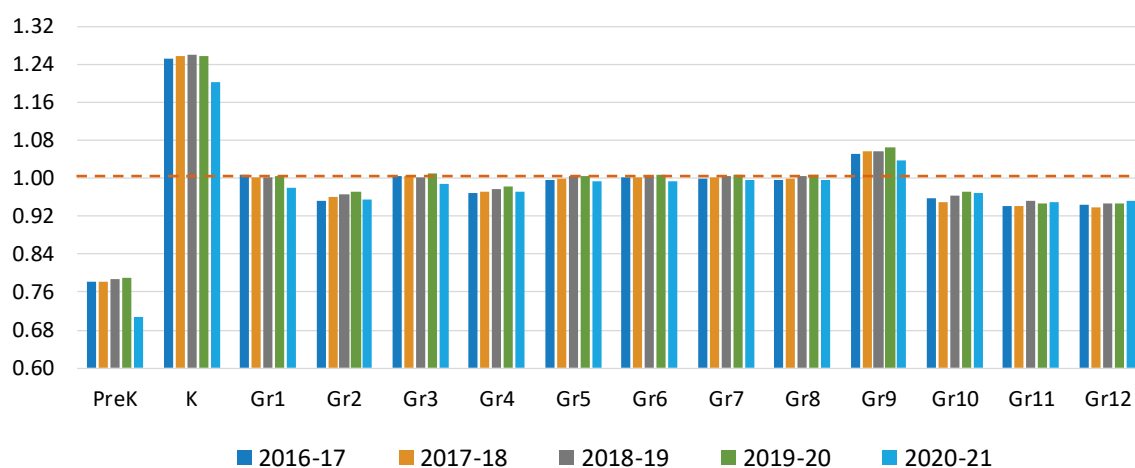
Note: All PK-12 students enrolled in public schools are included, except those attending either the Oklahoma School for the Deaf or the Oklahoma School for the Blind. Racial categories exclude individuals of Hispanic ethnicity. People of Hispanic ethnicity are classified as such regardless of race. English Learners status means that the student was placement-tested with an appropriate WIDA assessment and found to have limited proficiency in English. Students must be assessed for English language through the Home Language Survey. Alternately, a student may be identified as EL if district staff observe obvious signs of limited English proficiency in the course of instruction, and the district elects to assess the student with an appropriate WIDA assessment through a student's Home Language Survey and in Oklahoma using for potential EL services. 2020-21 data as of 01/10/2020.

Enrollment & Grade Progression Ratios

School enrollment projections are crucial for estimating the demand for teachers in upcoming years. Following the methodology used by the National Center for Education Statistics, public school enrollment was projected using past trends in progression and enrollment rates. Figure 13 displays the actual enrollment ratios for pre-kindergarten (preK) and actual progression ratios –from each to the next grade—for preK through grade 12, between 2016-17 and 2020-21. It also shows a dotted white line that denotes a GRP ratio of 1 –i.e., the same number of students enrolled in the previous grade are entering the following grade the next year. While across years most rates have a value of less than 1, the lowest rates, as in the past, appear in preK and grades 2 and 10-12.

Ratios for preschool, kindergarten, and all grades, except grades 11 and 12, frequently showed a positive trend before dropping between school years 2019-20 and 2020-21, arguably due to the COVID-19 pandemic. The largest estimated enrollment/grade progression drop occurred for preK (10 percentage points) and kindergarten (5 percentage points), with the remaining grades experiencing more commonly a 1-percentage-point drop. Among the grades that experienced an increase in the rate of progression between 2019-20 and 2020-21 (i.e., grades 11 and 12), grade 12 showed the largest increase (1 percentage point).

Figure 13
Enrollment & Grade Progression Ratios: PreK through grade 12
2016-17 to 2020-21



Note: All PK-12 students enrolled in public schools are included, except those attending either the Oklahoma School for the Deaf or the Oklahoma School for the Blind. Enrollment and grade progression ratios are author calculations using OSDE enrollment data and the Oklahoma State Department of Health population statistics' data.

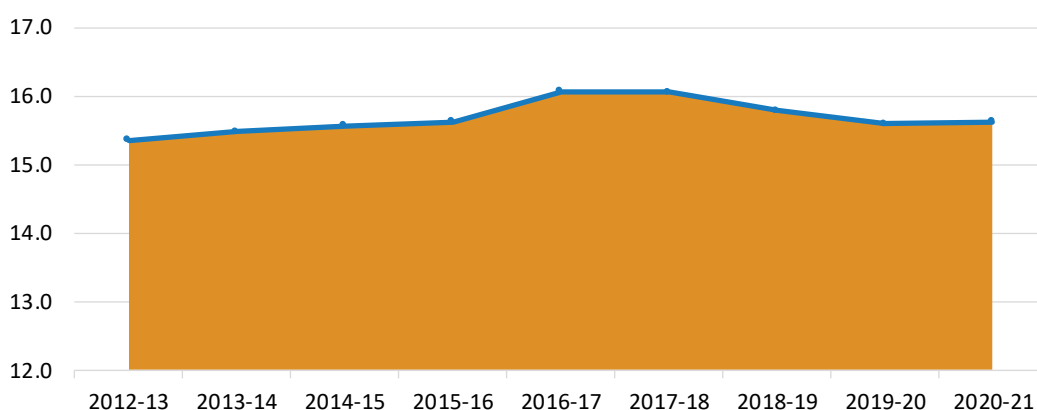
Pupil-educator Ratios & Class Size

Another factor that directly influences teacher demand is the pupil-educator ratio. Policy and practice changes in this ratio result in an increase or reduction in the number of educators in need. Empirical evidence suggests that low pupil-educator ratios positively affect student achievement—especially for students with less advantaged family backgrounds—and that the opposite, i.e., high pupil-educator ratios, can have harmful effects (Schanzenbach, D.W, 2014; Whitehurst & Chingos, 2011). The pupil-teacher ratio is one of the most common educational statistics that is frequently used as a proxy of educational quality since the lower the ratio, the higher the relative access of pupils to teachers. It is worth pointing out that the measurement of this indicator, however, does not necessarily represent the actual measure of class size or the

number of students a teacher has in the classrooms; a separate analysis is presented later in the section using class size as the indicator of reference. In this context, this section looks at Oklahoma's pupil-educator ratios and class size in the recent past, describing overall patterns, similarities and differences across schools with different characteristics, and by primary position level. It also provides specific data and trend analysis for the pupil-counselor ratios.

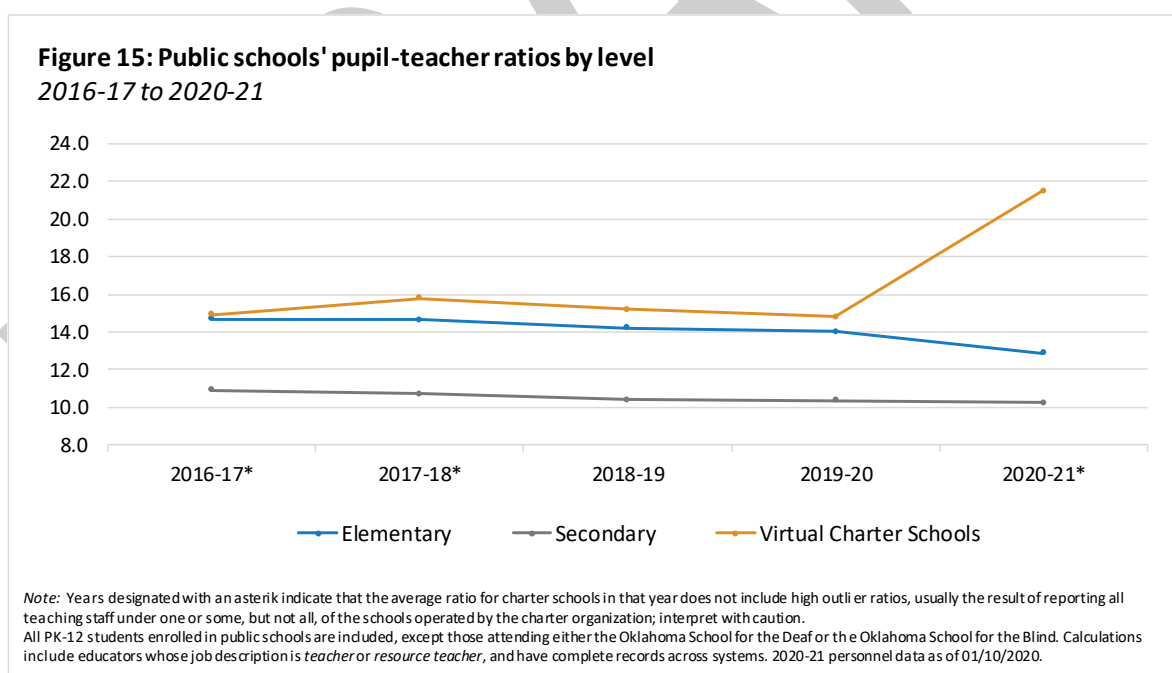
Pupil-teacher Ratios. The pupil-teacher ratio for the state first increased from 15.4 in 2012-13 to 16.1 in 2016-17 –the highest ratio during the period under analysis– and then decreased to 15.6 in both school years 2019-20 and 2021-21 (Figure 14). As already shown, in 2012-13, there were some 43,820 full-and part-time teachers in Oklahoma public schools. In 2020-21, this number increased by 2 percent or close to 840 more teachers. However, increases in student enrollment were proportionately larger in the first years –from 673,190 in 2012-13 to 692,670 in 2015-16 public school students– resulting in a consistent increase in the pupil-teacher ratio over those years. While the student enrollment continued to increase until 2019-20 –reaching close to 703,650 students–, it did it at a proportionately smaller rate than the growth in the teaching workforce producing a declining pupil-teacher ratio after 2017-18. The exception to these patterns is school year 2020-21; both student enrollment and the number of teachers working for the public school system in the last school year dropped proportionately to each other, leaving the overall pupil-teacher ratio unchanged at 15.6.

Figure 14: Public schools' overall pupil-teacher ratios
2012-13 to 2020-21



Note: All PK-12 students enrolled in public schools are included, except those attending either the Oklahoma School for the Deaf or the Oklahoma School for the Blind. Calculations include educators whose job description is *teacher* or *resource teacher*, and have complete records across systems. 2020-21 personnel data as of 01/10/2020.

The number of students per teacher tends to increase between primary and secondary education (Figure 15). In elementary schools, the average class per teacher in Oklahoma in school year 2020-21 had 13 pupils, 2 fewer pupils per teacher than four years earlier. At the secondary level (i.e., middle, junior high and high school combined), the average class in the last school year had 10 students, 1 fewer pupil per teacher than four years earlier. The pupil-teacher ratio has been higher for virtual charter schools than for elementary and secondary brick and mortar schools since at least 2016-17. In 2020-21, the gap widened considerably leaving the number of students per teacher enrolled in virtual schools at 21, 6 more pupils per teacher than in 2016-17. It is important to note that the ratios displayed for virtual schools in Figure 14 do not include high outlier ratios, which are the result of reporting all teaching staff under one or some, but not all, of the schools operated by the charter organization. If all the data were to be included in the calculations, the average pupil-teacher ratios for the Virtual schools would be much higher, e.g., 49 instead of 21 for the last school year. Therefore, caution is advised when attempting to make comparisons between categories or across years when data are marked with asterisks.



Student-teacher ratios also vary, and to a larger extent, by locale classification (Table 1). For example, the ratio in 2020-21 ranged from an average of 15 students per teacher in city schools to 10 in rural schools. While the student-teacher ratio has fairly consistently declined

across all locale categories between 2016-17 and 2020-21, the ratio for suburban schools instead of city schools was the highest across schools' urban/rural classification in each year between 2016-17 and 2019-20.

Table 1: Pupil-teacher ratios by school urban-centric 4-category locale
2016-17 to 2020-21

	City	Suburb	Town	Rural
2016-17	15.7	16.1	14.4	11.0
2017-18*	15.5	16.1	14.3	11.0
2018-19	15.1	15.5	13.9	10.7
2019-20	15.3	15.6	13.7	10.4
2020-21*	15.3	14.4	13.0	10.1

Note: Years designated with an asterik indicate that the average ratio for charter schools in that year does not include high outlier ratios, which is the result of reporting all teaching staff under one or some, but not all, of the schools operated by the charter organization; interpret with caution.
All PK-12 students enrolled in public schools are included, except those attending either the Oklahoma School for the Deaf or the Oklahoma School for the Blind. Calculations include educators whose job description is teacher or resource teacher, and have complete records across systems. 2020-21 personnel data as of 01/10/2020.
The urban and rural classifications use the NCES locale framework (2018-19 update as of 01/21/2021). For schools missing the urban-centric locale information, data imputation was used.

On average, pupil-teacher ratios increased between 2016-17 and 2020-21 as the schools' poverty concentration levels decreased (Table 2). The largest difference between high poverty and low poverty schools' pupil-teacher ratios was 3 students per teacher in both 2019-20 (12.8 vs. 16.2) and 2016-17 (12.4 vs. 15.8). The data also show two divergent trends across schools' poverty level. While the number of students per teacher in high and low poverty schools tended to increase in recent years, the number of students per teacher in mid-high and mid-low poverty schools steadily decreased during this time. School year 2020-21 is the exception to these trends, showing a noticeable drop in the pupil-teacher ratios for all but one poverty group examined.

Table 2: Pupil-teacher ratios by school poverty level
2016-17 to 2020-21

	High Poverty	Mid-high Poverty	Mid-low Poverty	Low Poverty
2016-17*	12.4	12.8	14.0	15.8
2017-18*	12.6	12.5	13.8	15.5
2018-19	12.9	12.0	13.0	15.6
2019-20	12.8	11.8	12.9	16.2
2020-21*	11.9	11.9	12.1	14.3

Note: Years designated with an asterik indicate that the average ratio for charter schools in that year does not include high outlier ratios, which is the result of reporting all teaching staff under one or some, but not all, of the schools operated by the charter organization; interpret with caution.

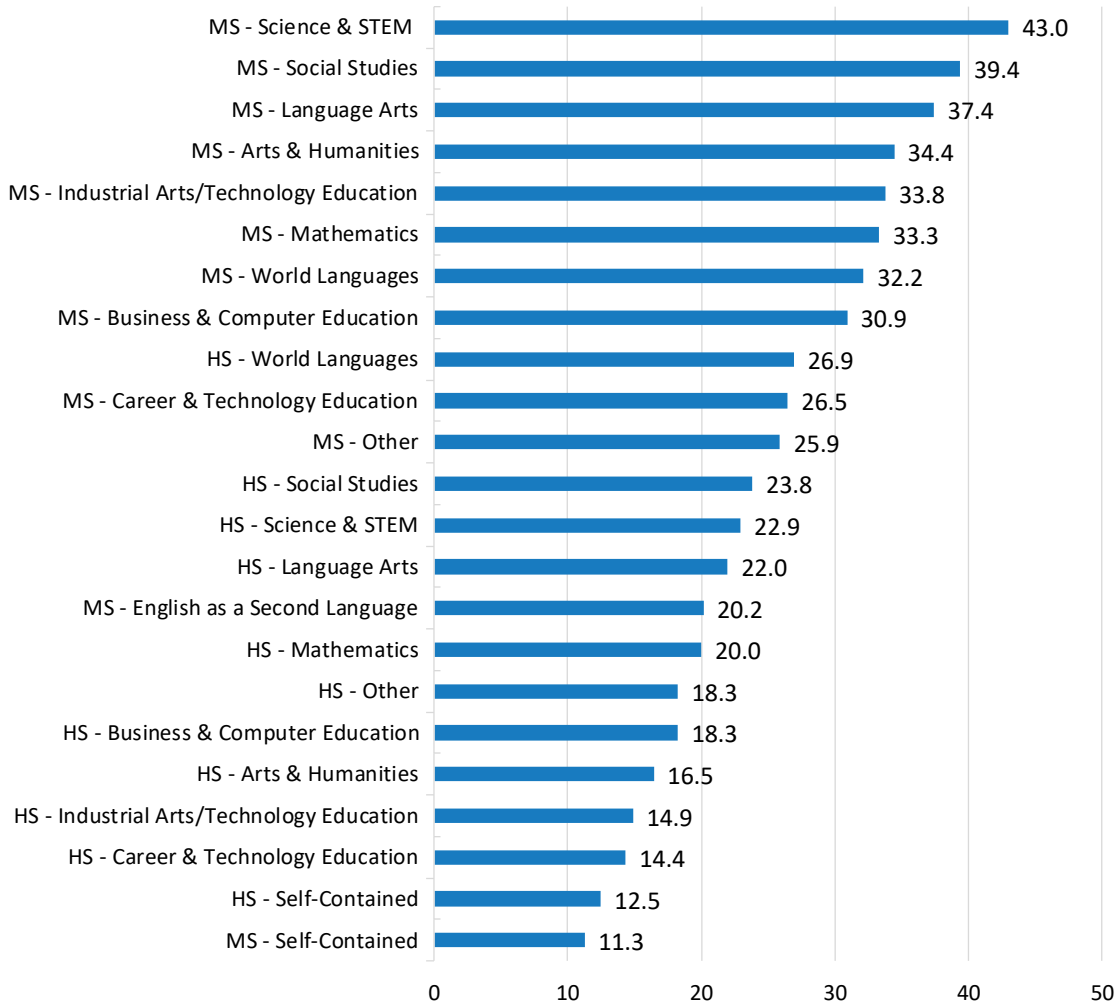
All PK-12 students enrolled in public schools are included, except those attending either the Oklahoma School for the Deaf or the Oklahoma School for the Blind. Calculations include educators whose job description is teacher or resource teacher, and have complete records across systems. 2020-21 personnel data as of 01/10/2020.

High-poverty schools are defined as public schools where more than 75.0 percent of the students are eligible for free or reduced-price lunch (FRPL); mid-high poverty schools are those where 50.1 to 75.0 percent of the students are eligible for FRPL; mid-low poverty schools are those where 25.1 to 50.0 percent of the students are eligible for FRPL; and low-poverty schools are those where 25.0 percent or less of the students are eligible for FRPL.

Aggregate ratios, however, are of little use in understanding any inadequacies at the teacher position level. Using a closely related variable to the pupil-teacher ratio, Figure 16 displays current class size averages by primary position. See *Section: Methodology* for a description of the primary position metric.

In 2020-21, the size of the average class for public school teachers was 24.3 pupils, but it varied widely from 43.0 students for teachers in middle school (MS) *science & STEM* classes to 11.3 students for teacher in *MS self-contained* classes. For this analysis, virtual schools are not included and middle school includes middle and junior high school levels. In 2020-21, at both middle and high school levels, the average class size for core subjects –i.e., primary positions in the analysis– are listed among the top 3 with the highest pupil load: *science & STEM*, *social studies*, and *language arts*. For all but one of the primary positions examined, the average number of pupils a teacher has in a class was larger in middle than in high schools. For example, the pupil load in *MS industrial arts* and technology education, *MS arts & humanities*, and *MS science & STEM* was in 2020-21 about double the size as that of the same classes in high schools. The most frequent subjects listed as other include health, nutrition and physical education (middle and high school levels), additional subject codes (middle and high school levels), and family & consumer sciences in high school.

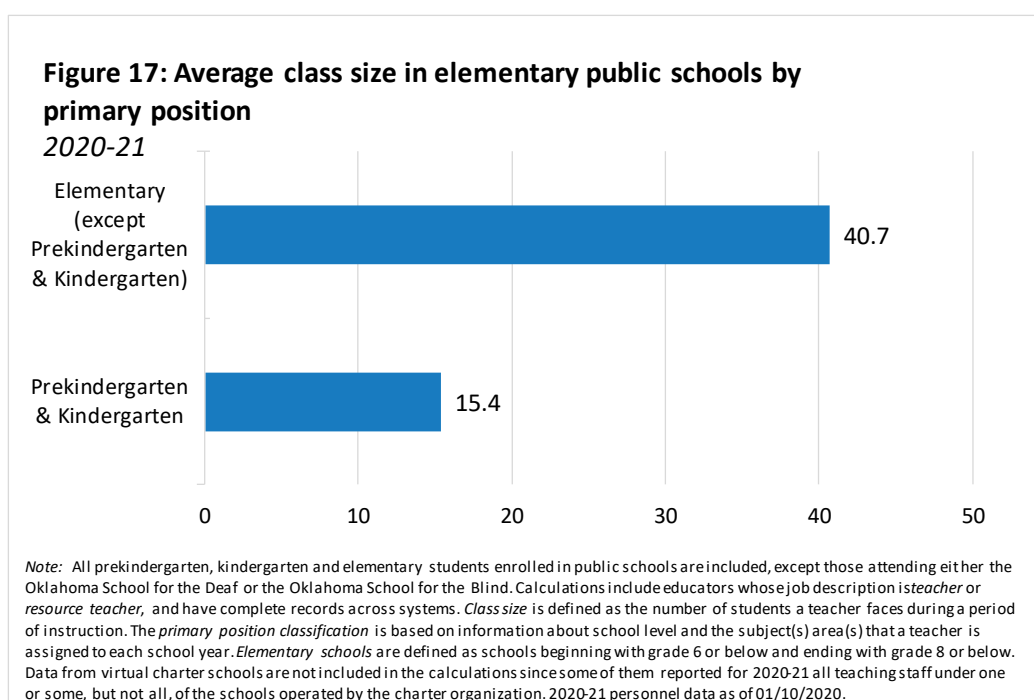
Figure 16: Average class size in secondary public schools by primary position
2020-21



Note: All middle, junior high and high school students enrolled in public schools are included, except those attending either the Oklahoma School for the Deaf or the Oklahoma School for the Blind. Calculations include educators whose job description is *teacher* or *resource teacher*, and have complete records across systems. *Class size* is defined as the number of students a teacher faces during a period of instruction. The *primary position classification* is based on information about school level and the subject(s) area(s) that a teacher is assigned to each school year. *Middle schools* are defined as schools usually beginning with grades 5 or 6 and ending with grades 7 or 8. *High schools* are defined as schools usually beginning with grades 9 or 10 and ending with grade 12. Data from virtual charter schools are not included in the calculations since some of them reported for 2020-21 all teaching staff under one or some, but not all, of the schools operated by the charter organization. 2020-21 personnel data as of 01/10/2020.

When the pupil load in elementary schools is grouped into two categories: elementary, except pre-kindergarten & kindergarten, and pre-kindergarten and kindergarten alone, the estimated difference in the number of students a teacher has in a class at different school levels is once again considerable. The average class size in 2020-21 for teachers in the first category was

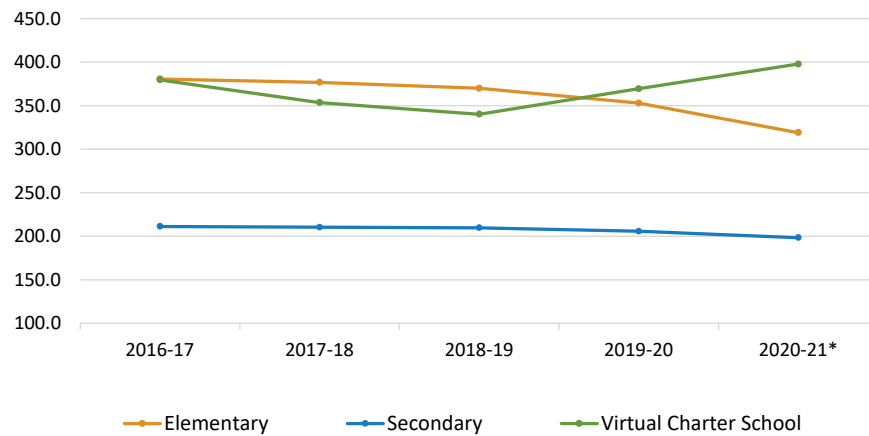
40.7 pupils and close to one-third of that size (i.e., 15.4) for teachers in preK & kindergarten classes (Figure 17).



Pupil-counselor Ratios. In Oklahoma, middle and high schools are expected to provide one counselor for a maximum of 450 students or a prorated number of hours per week for districts with fewer than 225 students (OAC 210: 35-7-43 and OAC 210: 35-9-43). No such requirement is provided for counselors in elementary level schools.

The large increase in the number of public school counselors during the second half of the 2010s outpaced the increase in enrollment. The average number of pupils per counselor across schools declined from 302.9 in 2016-17 to 284.7 in 2019-20; the ratio then moderately increased to 287.0 in 2020-21 (Figure 18). Although a similar declining trend is observed during this period for the ratio in both elementary and secondary schools, the gap in the ratio between schools in each grade span category has been closing steadily, attributed to the proportionately larger decreases in the number of students per counselor in elementary schools (i.e., an annual average change of -4.3 percent in elementary schools vs. -1.5 percent in secondary schools). The average number of pupils per counselor in virtual schools declined from 379.7 in 2016-17 to 340.3 in 2018-19; after that, the average ratio rose to 397.8 in 2020-21, the highest across all school levels in the last few years.

Figure 18: Public schools' pupil-counselor ratios by level
2016-17 to 2020-21



Note: Years designated with an asterisk indicate that the average ratio for charter schools in that year does not include high outlier ratios, usually the result of reporting all relevant staff under one or some, but not all, of the schools operated by the charter organization; interpret with caution. All PK-12 students enrolled in public schools are included, except those attending either the Oklahoma School for the Deaf or the Oklahoma School for the Blind. Calculations include educators whose job description is counselor, have a base salary (non-virtual charter schools) or contracted services (virtual charter schools), and have complete records across systems. Counselors may or may not have other jobs within the school district. 2020-21 personnel data as of 01/10/2020.

Similar to the trends found for pupil-teacher ratios, the student-counselor ratios are lowest among rural schools (Table 3). For example, the average number of students per counselor in 2020-21 was 221 in schools in rural areas, 335 in schools in towns, 418 in schools in cities, and 430 in schools in suburban areas. Across years, the difference between ratios for schools in suburban areas and rural schools was about twofold.

The decline in the average pupil-counselor ratio across schools between 2016-17 and 2020-21 was also observed for schools across all locale groups. Schools in cities show the highest drop (21 percent), followed by schools in suburban areas (14 percent), schools in towns (10 percent), and rural schools (10 percent).

Table 3: Pupil-counselor ratios by school urban-centric 4-category locale
2016-17 to 2020-21

	City	Suburb	Town	Rural
2016-17	418.5	430.4	335.6	221.2
2017-18	404.6	420.9	330.7	220.4
2018-19	394.9	417.3	327.6	218.1
2019-20	363.3	414.5	322.2	210.5
2020-21*	332.5	368.7	300.6	199.8

Note: Years designated with an asterisk indicate that the average ratio for charter schools in that year does not include high outlier ratios, usually the result of reporting all teaching staff under one or some, but not all, of the schools operated by the charter organization; interpret with caution.

All PK-12 students enrolled in public schools are included, except those attending either the Oklahoma School for the Deaf or the Oklahoma School for the Blind. Calculations include educators whose job description is counselor, have a base salary (non-virtual charter schools) or contracted services (virtual charter schools), and have complete records across systems. Counselors may or may not have other jobs within the school district. 2020-21 personnel data as of 01/10/2020.

The urban and rural classifications use the NCES locale framework (2018-19 update as of 01/21/2021). For schools missing the urban-centric locale information, data imputation was used.

The average number of students per counselor vary widely across schools with different concentrations of low-income students. For instance, the pupil-counselor ratio in 2020-21 was highest for low poverty schools (some 380) and lowest for mid-high poverty schools (some 250), a difference of 130 more students per counselor in low poverty schools (Table 4). Similar differences are observed for other years.

As with the overall ratios and the ratios by school locale categories, the average number of students per counselor dropped across all types of schools regardless their concentration of students in poverty. Mid-low and mid-high poverty school had the highest decline in the pupil-counselor ratio (both decreased by 16 percent), followed by low income schools (11 percent), and high poverty schools (5 percent). The latter group, however, experienced a slight increase in the average number of students per counselor between 2016-17 and 2018-19.

Table 4: Pupil-counselor ratios by school poverty level
2016-17 to 2020-21

	High Poverty	Mid-high Poverty	Mid-low Poverty	Low Poverty
2016-17	264.3	290.4	346.3	424.7
2017-18	267.8	278.9	345.0	400.4
2018-19	291.6	268.8	330.9	437.2
2019-20	278.7	258.4	319.3	420.2
2020-21*	250.8	243.6	291.1	379.2

Note: Years designated with an asterisk indicate that the average ratio for charter schools in that year does not include high outlier ratios, usually the result of reporting all teaching staff under one or some, but not all, of the schools operated by the charter organization; interpret with caution.

All PK-12 students enrolled in public schools are included, except those attending either the Oklahoma School for the Deaf or the Oklahoma School for the Blind. Calculations include educators whose job description is counselor, have a base salary (non-virtual charter schools) or contracted services (virtual charter schools), and have complete records across systems. Counselors may or may not have other jobs within the school district. 2020-21 personnel data as of 01/10/2020.

High-poverty schools are defined as public schools where more than 75.0 percent of the students are eligible for free or reduced-price lunch (FRPL); mid-high poverty schools are those where 50.1 to 75.0 percent of the students are eligible for FRPL; mid-low poverty schools are those where 25.1 to 50.0 percent of the students are eligible for FRPL; and low-poverty schools are those where 25.0 percent or less of the students are eligible for FRPL.

Turnover

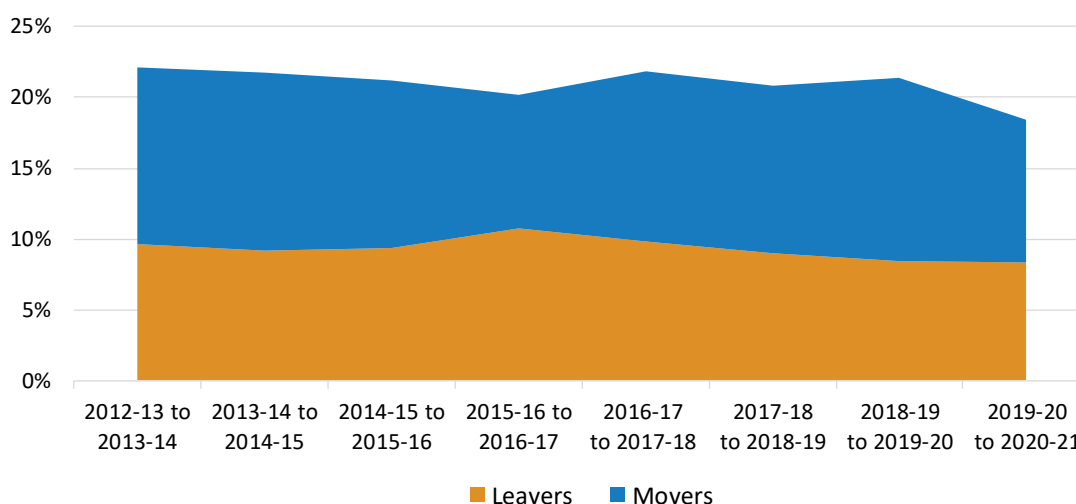
Educator turnover and retention are two of the three components –the third one is newly hired educators– of the size of the educator workforce from one year to the next. The number of educators who leave public teaching between two consecutive years and those who move between school districts and/or change position are critical components of the teaching market for two important reasons. First, turnover (i.e., leavers and movers) creates vacancies that increase the annual demand of educators, and recruitment and hiring of new educators is costly (Barnes, Crowe, & Schaefer, 2007; Milanowski & Odden, 2007; Shockley, Guglielmino, & Watlington, 2006). Second, turnover has been shown to have negative effects on student achievement (Ronfeldt, Lankford, Loeb, & Wyckoff, 2012; Balu & Loeb, 2009). Of course, if those who are less effective are the ones leaving, turnover is not necessarily bad (Goldhaber, Gross, & Player, 2007; Boyd, Grossman, Lankford, Loeb, & Wyckoff, 2008).

While there have been persistent and growing shortages of teachers and other educators in the U.S. for most of the past decade (Garcia & Weiss, 2019), understanding their sources, magnitude and composition before and during the COVID-19 pandemic is of paramount importance as schools reopen. Turnover, however, is not uniform across communities and classrooms; it affects some regions, schools, student populations, and subject areas more than others (Leib, Darling-Hammond, & Carver-Thomas, 2016). Next is the examination of trends and characteristics of key sources of the state turnover for teachers, counselors, and principals in the public school system.

Teacher Turnover: Movers and Leavers. Irrespective of whether a teacher leaves the public school system altogether or moves to another school or position, her/his/their departure will have an effect on the school: having to find a replacement teacher. As such, turnover is comprised of educators who between two years: 1) move to another school, into a teaching or non-teaching position, or stay in the same school but in a non-teaching job (i.e., *movers*), or 2) leave public school teaching entirely (i.e., *leavers*). In Oklahoma, more than one-sixth (18 percent) of public school teachers in 2019-20 did not stay in the same position at the same school in 2020-21 –about 3 percent lower than the rate in the period of 2018-19 to 2019-20 (Figure 19).

While the majority of teacher turnover in recent years was mainly comprised of movers (e.g., 10 out of 18 percent between 2019-20 and 2020-21), the participation of leavers varied from year to year with no clear pattern of change. For example, the estimated number and rate of leavers were highest between 2015-16 and 2016-17 (some 5,300; 11 percent) and were lowest between 2019-20 and 2020-21 (some 4,200; 8 percent). With the exception of 2015-16, the rate of movers has stayed at or slightly higher than 10 percent since 2012-13.

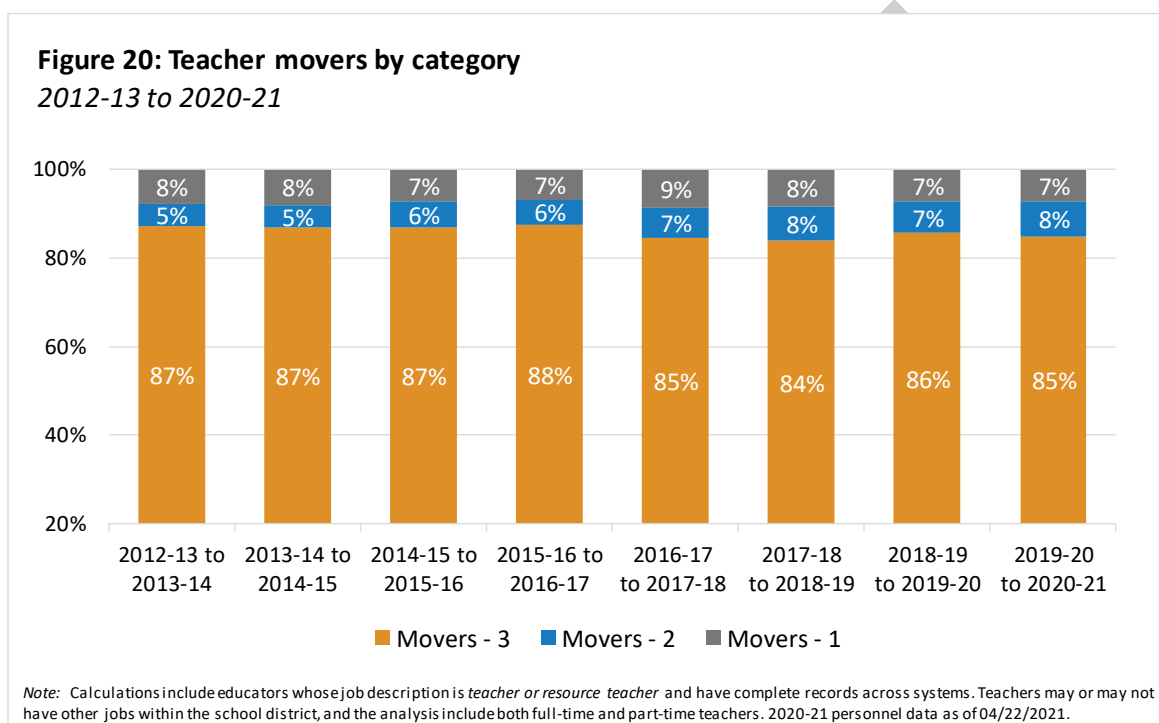
Figure 19: Rate of turnover for teachers
2012-13 to 2020-21



Note: Calculations include educators whose job description is *teacher* or *resource teacher* and have complete records across systems. Teachers may or may not have other jobs within the school district, and the analysis include both full-time and part-time teachers. 2020-21 personnel data as of 04/22/2021.

The great majority of teacher movers across years were teachers who moved to a different school (*movers category 3*) –e.g., movers in this category represented 85 percent of all movers between 2019-20 and 2020-21 (Figure 20). An additional 8 percent moved to or stayed in a non-

teaching position within the same school (*movers category 2*), and 7 percent moved to or stayed in a non-teaching position at a different school (*movers category 1*). These distributions have slightly changed since 2012-13, with both the rate of movers 3 and movers 1 dropping from 87 and 8 percent to 85 and 7 percent, respectively, and the rate of movers 2 increasing by three percentage points during the same period (5 percent vs. 8 percent).

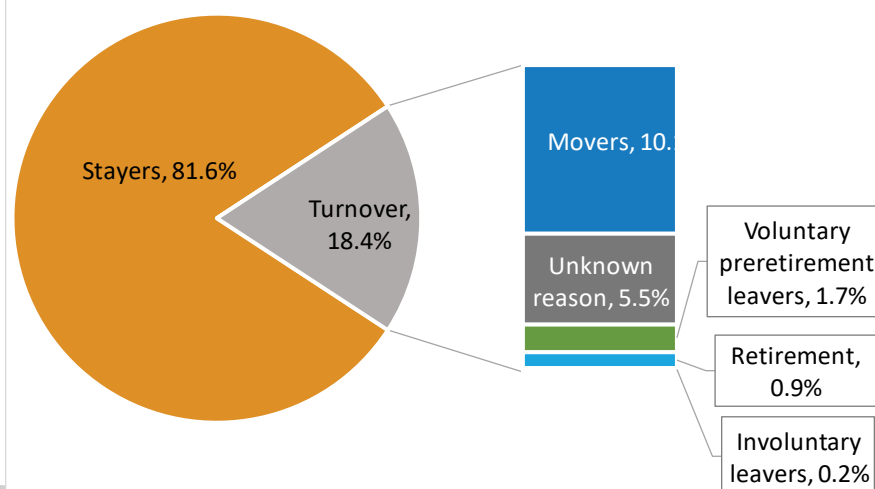


Among all teacher movers and leavers between 2019-20 and 2020-21 (18.2 percent), 1.7 percent were voluntary pre-retirement leavers (more than 800 teachers), and 0.9 percent were retirement leavers (close to 470) (Figure 21). Since the school statewide closures due to COVID-19 went into effect late March 2020, any impact of the pandemic on the teacher turnover would only be seen in the following school year, i.e., 2020-21. Between 2019-20 and 2020-21, the rate of teacher movers was 2.8 percentage points lower than between 2018-19 and 2019-20 (Figure 22), or around 1,400 fewer teachers moving to different school, role or both, than otherwise expected. The effects of such a decrease are significant because they cut the need to replace each of those 1,400 teachers during 2020-21. The rate of voluntary pre-retirement leavers –turnover due to life changes, professional opportunities outside of public teaching, dissatisfactions with teaching, etc. – was also lower between 2019-20 and 2020-21 than between 2018-19 and 2019-20,

albeit the drop was more modest (0.2 percentage points lower). The rate of involuntary leavers remained unchanged at 0.2 percent during both periods.

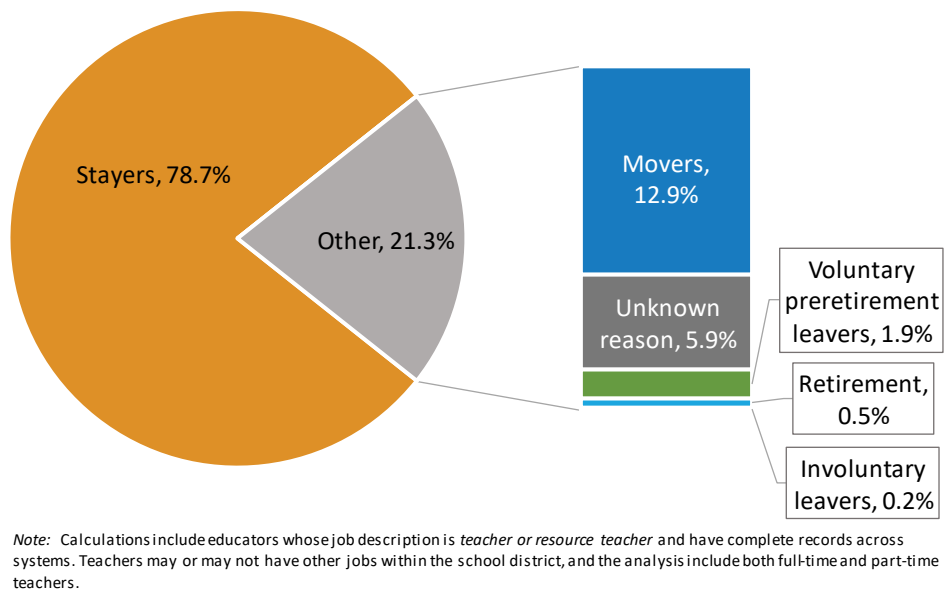
Unlike all the other components of turnover, retirement increased between the last two school years in both terms of quantity and rate. The modest 0.4 percent increase in the rate means that more than 200 additional teachers retired between 2019-20 and 2020-21 than otherwise expected. Caution is warranted in data interpretation since 5.5 percent of the 18.2 turnover rate between 2019-20 and 2020-21 does not include data on the reasons for leaving the profession.

Figure 21: Sources of teacher turnover
2019-20 to 2020-21



Note: Calculations include educators whose job description is *teacher* or *resource teacher* and have complete records across systems. Teachers may or may not have other jobs within the school district, and the analysis includes both full-time and part-time teachers. 2020-21 personnel data as of 04/22/2021.

**Figure 22: Sources of teacher turnover
2018-19 to 2019-20**

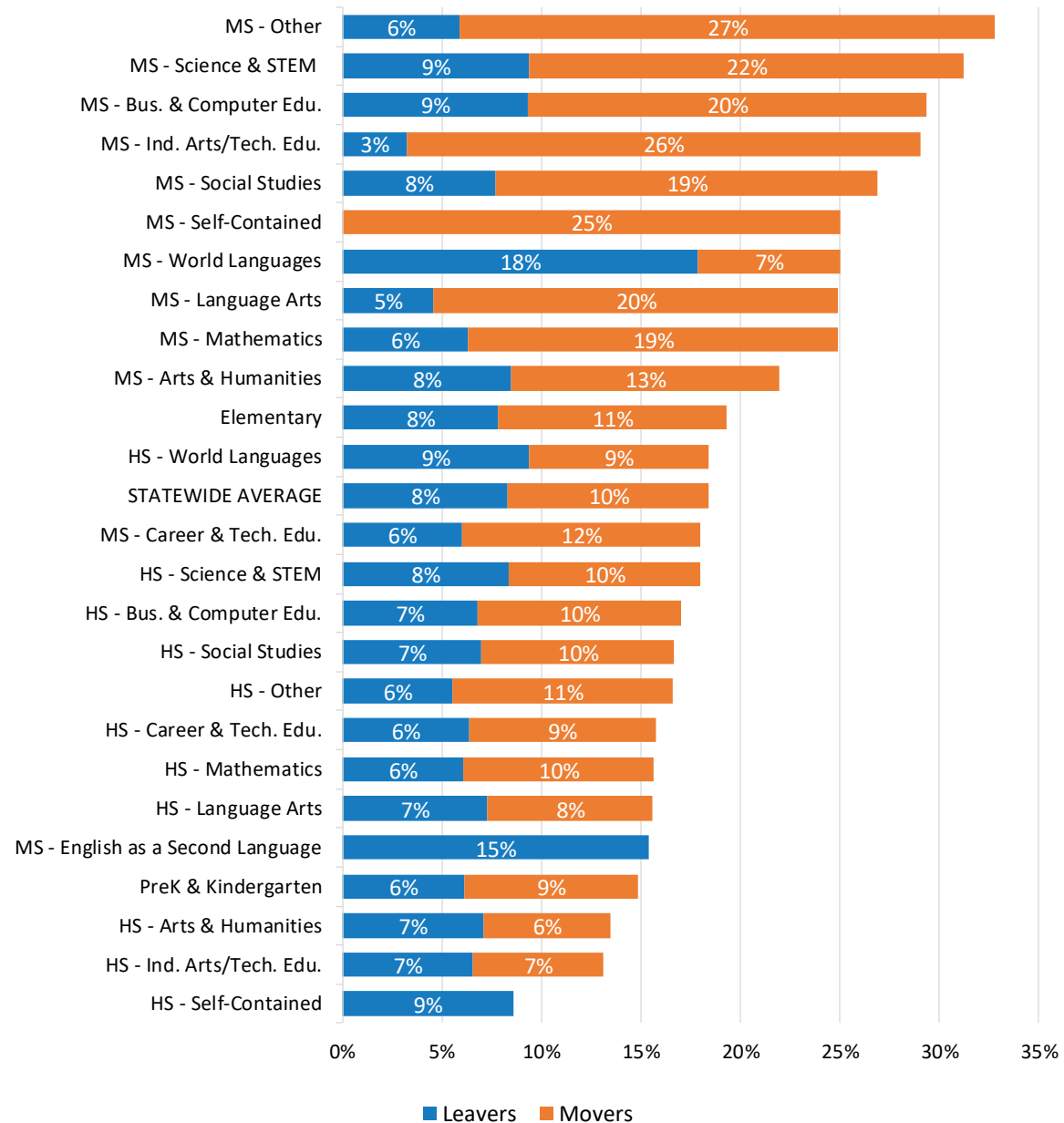


Teachers in fields such as mathematics, science, special education, and foreign languages are more likely to move to another school and/or job or to leave the profession than those in other fields (Carver-Thomas & Darling-Hammond, 2017). Figure 23 shows the most recent turnover rates for Oklahoma public school teachers, disaggregated into leavers and movers, for 25 primary positions in 2019-20. The percentage of turnover during the period of 2019-20 to 2020-21 was higher than the statewide percentage of 18.4 percent for 12 positions, 10 of which are in middle school, and four are core subjects. The positions are *HS world languages*, *elementary*, *MS arts & humanities*, *MS mathematics*, *MS language arts*, *MS world languages*, *MS self-contained*, *MS social studies*, *MS industrial arts & technology education*, *MS business & computer education*, *MS science & STEM*, and *MS other*.

Among all primary positions, *MS science & STEM* had the second highest turnover rate at 31 percent – *MS other* had the highest rate at 33 percent. At the high school level, the highest turnover rate was also for *science & STEM* at 18 percent. It is worth noting that while *preK & kindergarten* ranks among the lowest for turnover rate, elementary’s rate is higher than the overall turnover rate, and the difference between both rates was more than four percentage points (15 vs. 19 percent respectively).

In comparison to the period of 2018-19 to 2019-20 (not shown in the figures), the turnover rates from 2019-20 to 2020-21 were lower for the majority of primary positions (16 out of 26), with four showing a difference of more than 10 percentage points. The four subjects are *MS self-contained* (25 vs. 54 percent), *MS English as a second language* (15 vs. 36 percent), *MS language arts* (5 vs. 21 percent), and *HS language arts* (8 vs. 20 percent). Among the nine primary positions that had higher turnover rates in the period of 2019-20 to 2020-21 than the period immediately preceding it, one stands out with a difference of more than 10 percentage points: *MS science & STEM* (31 vs. 18 percent).

Figure 23: Teacher turnover by primary position
2019-20 to 2020-21



Note: Calculations include educators whose job description is *teacher* or *resource teacher* and have complete records across systems. Teachers may or may not have other jobs within the school district, and the analysis include both full-time and part-time teachers. The *primary position classification* is based on information about school level and the subject(s) area(s) that a teacher is assigned to each school year. *Middle schools* are defined as schools usually beginning with grades 5 or 6 and ending with grades 7 or 8. *High schools* are defined as schools usually beginning with grades 9 or 10 and ending with grade 12. Data from virtual charter schools are not included in the calculations since some of them reported for 2020-21 all teaching staff under one or some, but not all, of the schools operated by the charter organization. 2020-21 personnel data as of 04/22/2021.

Evidence has established that teacher turnover is more acute in high-poverty schools than in schools with lower poverty rates (U.S. Department of Education, National Center for Education Statistics, n.d.). Oklahoma public schools are not the exception. A higher percentage

of teachers from high-poverty schools (10 and 14 percent) than from mid-high (8 and 10 percent), mid-low (7 percent each), or low poverty schools (8 and 11 percent) left the profession or moved to other jobs and/or schools between 2019-20 and 2020-21 (Table 5). The differences observed across poverty groups in 2020-21 are very similar to the differences that existed before the pandemic, i.e., in 2019-20: mid-low poverty schools, as opposed to low-poverty schools, usually had the lowest turnover rates. For example, while the rate of movers in 2020-21 in low-poverty schools was 11 percent, the rate of movers in mid-low poverty schools was 7 percent during the same time period. In comparison to the statewide turnover rates by component between 2019-20 and 2020-21, high-poverty schools show the largest positive difference (12 vs. 9 percent) for teacher who moved to a different school while mid-low poverty schools show the largest negative difference (6 vs. 9 percent) for the same group of movers, i.e., movers category 3.

Table 5: Rate of teacher turnover by school poverty level

2018-19 to 2019-20 & 2019-20 to 2020-21

	High Poverty		Mid-high Poverty		Mid-low Poverty		Low Poverty	
	2019-20 to 2020-21	2018-19 to 2019-20	2019-20 to 2020-21	2018-19 to 2019-20	2019-20 to 2020-21	2018-19 to 2019-20	2019-20 to 2020-21	2018-19 to 2019-20
Leavers	10.5%	10.5%	7.6%	7.8%	7.5%	7.5%	8.0%	7.8%
Movers	13.5%	18.5%	9.8%	11.9%	7.2%	9.4%	10.9%	9.6%

Note: Calculations include educators whose job description is *teacher or resource teacher* and have complete records across systems. Teachers and resource teachers may or may not have other jobs within the school district, and the analysis include both full-time and part-time teachers and resource teachers. 2020-21 personnel data as of 05/21/2021. High-poverty schools are defined as public schools where more than 75.0 percent of the students are eligible for free or reduced-price lunch (FRPL); mid-high poverty schools are those where 50.1 to 75.0 percent of the students are eligible for FRPL; mid-low poverty schools are those where 25.1 to 50.0 percent of the students are eligible for FRPL; and low-poverty schools are those where 25.0 percent or less of the students are eligible for FRPL.

When disparities in the distribution of teacher turnover across school locale classifications have been documented, the rate was found to be higher in cities than in suburbs or rural schools/districts (Carver-Thomas & Darling-Hammond, 2017). From 2019-20 to 2020-21, the percentage of Oklahoma public school teachers who did not stay in the same position and/or at the same school (leavers and movers) was at least 5 percentage points higher in city schools than in schools located in other geographic areas (Table 6). Similar differences are found for teacher movers and leavers from 2018-19 to 2019-20, but the size of the differences was larger; relative to schools in towns and rural areas, schools in cities had a turnover rate at least one and a-half times higher. When compared to the overall turnover rates by component from 2019-20 to 2020-21, city schools show the largest positive difference for, once again, the movers category 3

(11 vs. 9 percent), while rural schools have the largest negative difference for the same movers category (7 vs. 9 percent).

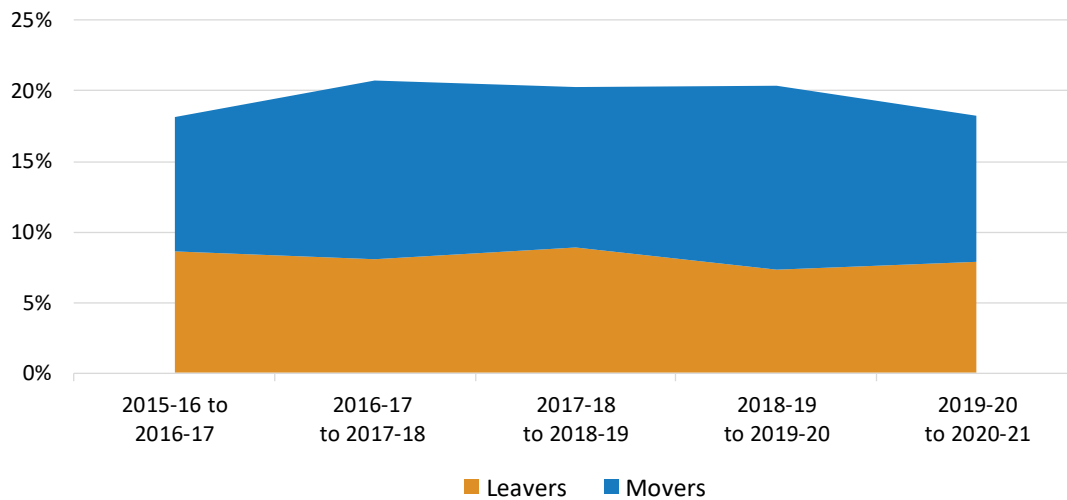
Table 6: Rate of teacher turnover by school locale
2018-19 to 2019-20 & 2019-20 to 2020-21

	City		Suburb		Town		Rural	
	2019-20 to 2020-21	2018-19 to 2019-20	2019-20 to 2020-21	2018-19 to 2019-20	2019-20 to 2020-21	2018-19 to 2019-20	2019-20 to 2020-21	2018-19 to 2019-20
Leavers	10.8%	11.9%	8.4%	8.4%	7.3%	7.2%	7.3%	7.0%
Movers	13.3%	18.6%	10.5%	11.5%	9.2%	10.8%	8.3%	11.3%

Note: Calculations include educators whose job description is *teacher or resource teacher* and have complete records across systems. Teachers and resource teachers may or may not have other jobs within the school district, and the analysis include both full-time and part-time teachers and resource teachers. 2020-21 personnel data as of 05/21/2021. The urban and rural classifications use the NCES locale framework (2018-19 update as of 01/21/2021). For schools missing the urban-centric locale information, data imputation was used.

Counselor Turnover: Movers and Leavers. Some 82 percent of those who were public school counselors in school year 2019-20 stayed as a counselor at the same school in 2020-21, while 10 percent moved to a different position and/or school, and 8 percent left the profession altogether (Figure 24). In proportional terms, the distribution of counselor stayers, movers, and leavers in the period of 2019-20 to 2020-21 was very similar to that of teachers during the same period. Moreover, as with the turnover rate for teachers in 2020-21, the percentage of counselor movers and leavers in 2020-21 was lower than in 2019-20 (18 vs. 20 percent) –the rate remained in the 20-21 percent range between 2016-17 and 2018-19.

Figure 24: Rate of turnover for counselors
2015-16 to 2019-20



Note: Calculations include educators whose job description is *counselor* and have complete records across systems. Counselors may or may not have other jobs within the school district, and the analysis include both full-time and part-time counselors. 2020-21 personnel data as of 05/21/2021.

Of the counselor movers in 2020-21, the majority (60 percent) stayed as a counselor but moved from one public school to another, while smaller percentages moved to a non-counseling position at another school (27 percent), or to a non-counseling position at the same school (12 percent) (Table 7). Between 2016-17 and 2020-21, the percentage of counselor movers category 3 remained largely unchanged, at above 60 percent, while the percentage of movers category 1 increased from 20 to 27 percent, and the percentage of movers category 2 decreased from 19 to 12 percent. The distribution of counselor movers across categories in 2020-21 was similar to the distribution of teacher movers as the great majority of them moved to a similar position in another school. The counselor groups, however, were somewhat more evenly distributed.

Table 7: Counselor movers by category
2016-17 to 2020-21

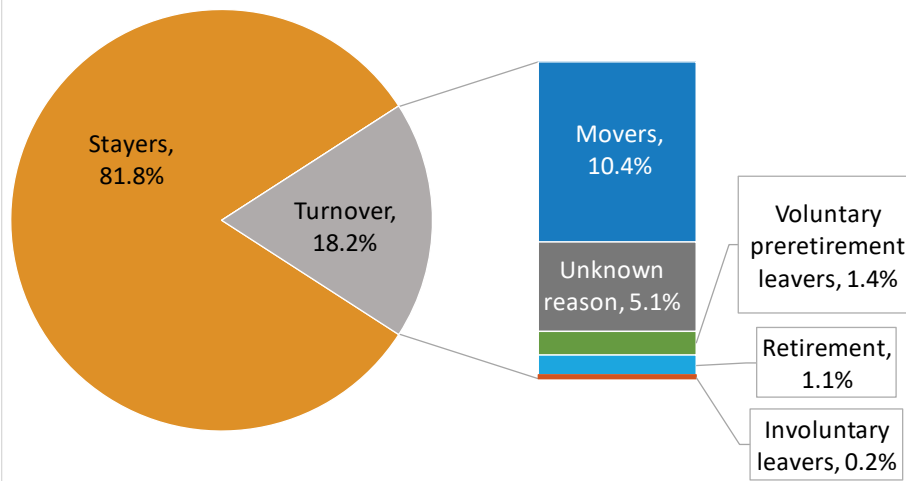
	Movers - 1	Movers - 2	Movers - 3
2015-16 to 2016-17	20.1%	19.1%	60.8%
2016-17 to 2017-18	23.0%	16.6%	60.4%
2017-18 to 2018-19	23.1%	16.4%	60.5%
2018-19 to 2019-20	21.9%	14.0%	64.0%
2019-20 to 2020-21	27.4%	12.2%	60.4%

Note: Calculations include educators whose job description is *counselor* and have complete records across systems. Counselors may or may not have other jobs within the school district, and the analysis include both full-time and part-time counselors. 2020-21 personnel data as of 05/21/2021.

Aside from the approximate 230 counselor movers between 2019-20 and 2020-21, more than 170 counselors left the profession, accounting for 7.9 percentage points of the 18.2 percent turnover rate (Figure 25). Among the leavers, 1.4 percent were voluntary pre-retirement leavers (more than 30 counselors), and 1.1 percent were retirement leavers (25 counselors). Due to the large number of counselor leavers for whom the reason for leaving is missing (5.1 percent), caution is warranted when drawing conclusions about their motivation(s) for leaving.

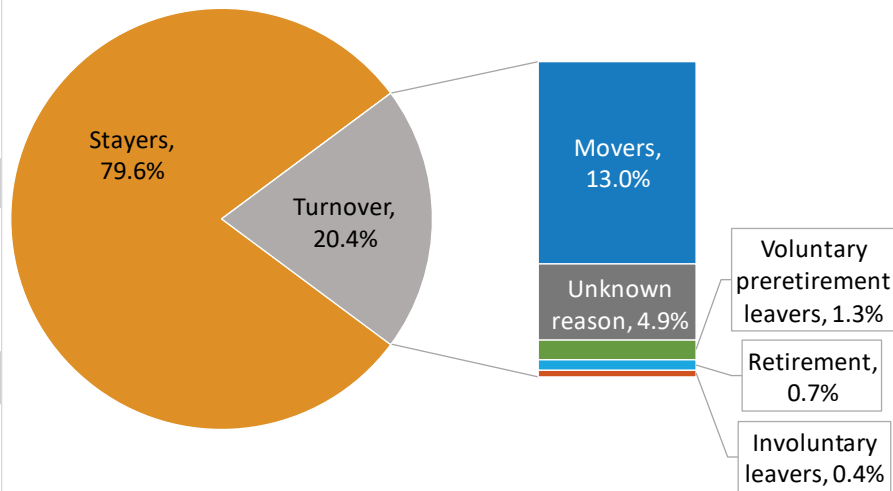
As with the mover and leaver rates for teachers in 2020-21, the percentage of counselor movers was lower (10 vs. 13 percent) and the percentage of retirement leavers higher (1.1 vs. 0.4 percent) than in 2019-20 (Figure 26). However, unlike the drop in the voluntary pre-retirement rate for teachers, the rate of voluntary pre-retirement counselors minimally increased from 1.3 percent in 2019-20 to 1.4 percent in 2020-21.

Figure 25: Sources of counselor turnover
2019-20 to 2020-21



Note: Calculations include educators whose job description is *counselor* and have complete records across systems. Counselors may or may not have other jobs within the school district, and the analysis includes both full-time and part-time counselors. 2020-21 personnel data as of 05/21/2021.

Figure 26: Sources of counselor turnover
2018-19 to 2019-20



Note: Calculations include educators whose job description is *counselor* and have complete records across systems. Counselors may or may not have other jobs within the school district, and the analysis includes both full-time and part-time counselors.

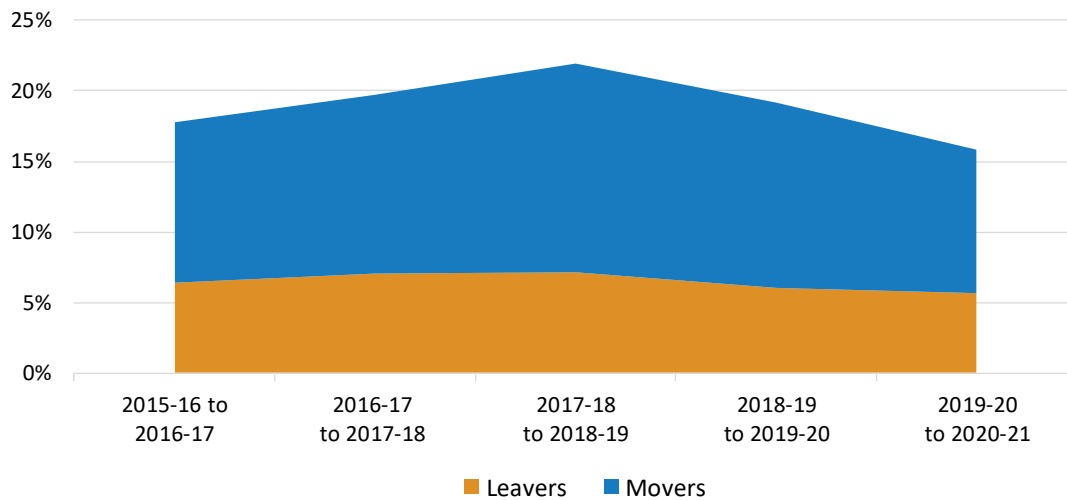
Principal Turnover: Movers and Leavers. According to the most recent National Center for Education Statistics' data on public school principals, nationally, more than one in six principals leave their schools or the principalship altogether every year (U.S. Department of

Education, National Center for Education Statistics, 2019). Although in recent years principal turnover has been decreasing, the unprecedented education environment and health concerns during the COVID-19 pandemic threatened with accelerating some principals' departure plans putting at risk the positive trend in the turnover rate among principals (National Association of Secondary School Principals, 2021). This section provides data on public school principal turnover and its components before and during the pandemic.

In spite of the challenges posed by the pandemic, principal turnover in Oklahoma has continued to drop. The percentage of public school principals who were leavers or movers from 2019-20 to 2020-21 (16 percent) was lower than the percentages in prior periods (20 percent from 2018-19 to 2019-20, 22 percent from 2017-18 to 2018-19, and 19 percent in 2016-17 to 2017-18) (Figure 27). During the period of analysis, the rate hit a record high of 22 percent in 2018-19, mainly due to an unusually high rate of movers (15 percent).

Except for 2018-19, the turnover rate for principals has been consistently lower than that of classroom teachers and counselors since 2016-17, including the most recent school year (16 percent vs. 18 percent for both categories, respectively). What is similar among principals, teachers, and counselors, is that movers represent the majority of the turnover, albeit the participation rate of this component for principals is higher. For example, the rate of movers for principals in 2020-21 is 64 percent vs. 57 and 55 percent for counselors and teachers, respectively.

Figure 27: Rate of turnover for principals
2015-16 to 2019-20



Note: Calculations include educators whose job description is *principal* and have complete records across systems. Principals may or may not have other jobs within the school district, and the analysis include both full-time and part-time principal. 2020-21 personnel data as of 05/25/2021.

The pre-pandemic participation trends across mover categories for principals have continued during the period of 2019-20 to 2020-21 (Table 8). Principals who in the following year were not in the same school and held a non-principalship position (*movers category 1*) represented 51 percent of all movers in 2020-21, two percent higher than in 2019-20, and seven percent higher than in 2016-17. In addition, about three in every eight principals were in a different school the following year (*movers category 3*), with the rate showing a steady decrease since 2016-17. The same trend applies to the movers in category 2 (principals who in the following year were in a non-principal position in the same school); this group represented 12 percent of all movers in 2020-21, three percent lower than four years earlier.

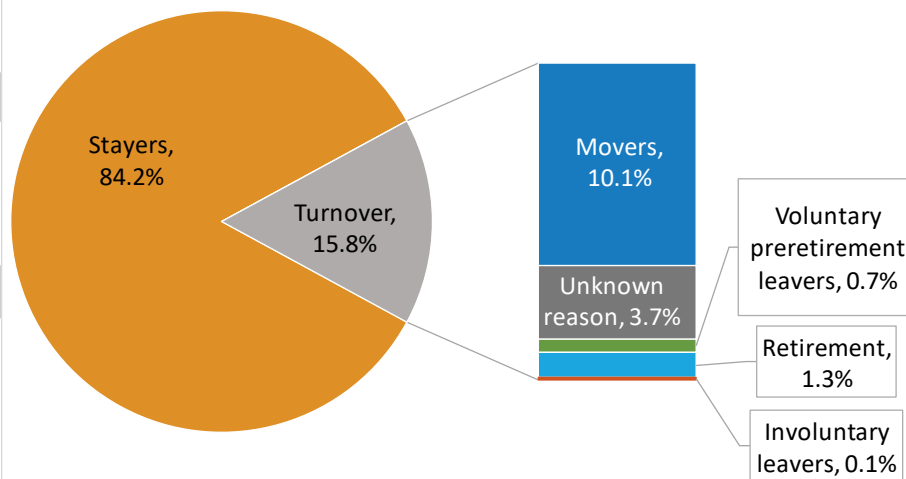
Table 8: Principal movers by category
2016-17 to 2020-21

	Movers - 1	Movers - 2	Movers - 3
2015-16 to 2016-17	44.2%	14.9%	40.9%
2016-17 to 2017-18	50.4%	9.8%	39.7%
2017-18 to 2018-19	47.0%	15.0%	38.0%
2018-19 to 2019-20	49.4%	14.6%	36.0%
2019-20 to 2020-21	51.5%	11.9%	36.6%

Note: Calculations include educators whose job description is *principal* and have complete records across systems. Principals may or may not have other jobs within the school district, and the analysis include both full-time and part-time principals. 2020-21 personnel data as of 05/21/2021.

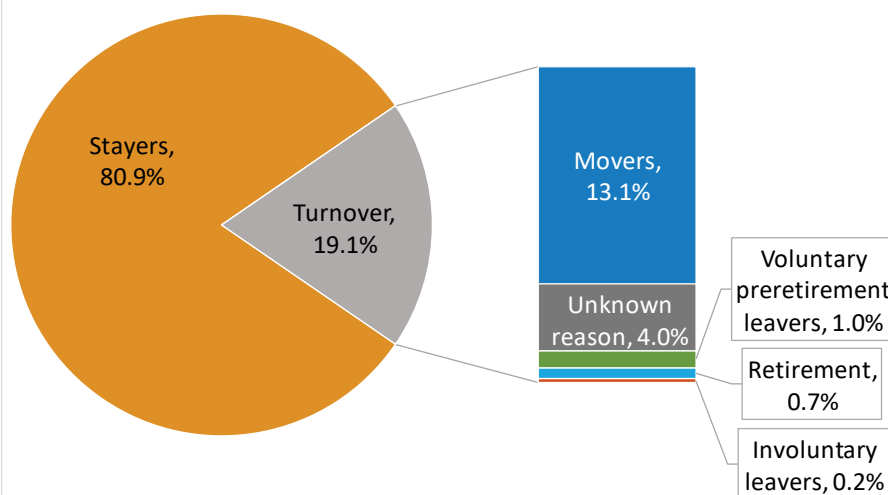
Across years, the participation of each source of turnover for principals is highly similar to that of teachers and counselors (Figures 28 & 29). Moreover, recent trends across turnover sources show similar patterns in the way educators in different roles have responded to the pandemic. More notably, the share of principals who retired after the 2019-20 school year was 0.6 percent higher than in 2018-19 (1.3 vs. 0.7 percent, respectively); as already reviewed, the rate of increase for teachers and counselors during the same period was 0.4 percent each.

Figure 28: Sources of principal turnover
2019-20 to 2020-21



Note: Calculations include educators whose job description is *principal* and have complete records across systems. Principals may or may not have other jobs within the school district, and the analysis include both full-time and part-time principals. 2020-21 personnel data as of 05/21/2021.

Figure 29: Sources of principal turnover
2018-19 to 2019-20



Note: Calculations include educators whose job description is *principal* and have complete records across systems. Principals may or may not have other jobs within the school district, and the analysis includes both full-time and part-time principals.

Retention

On the flip side of turnover is retention, or the ability to keep educators employed in the public school system, and it should be simultaneously tracked and analyzed to better inform personnel management practice and policy. Evidence suggests that early-career educators face compounding challenges and therefore are more likely to leave the profession than more experienced educators (Vuilleumier, 2019; Borman & Dowling, 2008). This section provides data on retention of beginning teachers, counselors and principals in public schools, covering up to five years of their careers. As in similar studies (Nguyen, Pham, Springer, & Crouch, 2019), we measure retention from the school's perspective; however, comparisons to alternative metrics of retention are also provided.

Teacher Retention. According to the most recent National Center for Education Evaluation & Regional Assistance' data, about three in every five beginning teachers stay as a teacher the following year at the same school (Silva, McKie, & Gleason, 2015). In Oklahoma, about 69 percent of those we were public school teachers in school year 2019-20 remained in the same school in 2020-21 (Figure 30). As is the case for the overall trends in the education workforce (*Section: Supply*), much of the retention trends observed in the last nine years or so can be explained by important developments in the education system. For example, the major

cuts in state funding for public education in 2015-16 were followed by a 2-percentage point's drop in the retention rate of beginning public school teachers. Similarly, after the first pay raises for public schools' certified personnel were approved in 2017-18, the retention rate of beginning teachers increased from 63 to 68 percent, the largest year-over-year change in recent years. In addition, between 2019-20 and 2020-21, as districts were considering their options for reopening in 2020-21 when the COVID-19 pandemic was in full force, a larger than usual percentage of first-year teachers returned to teaching (i.e., 69 percent), likely because voluntary job-leaving and job searches were put off by many educators in 2021 (Brown, 2021).

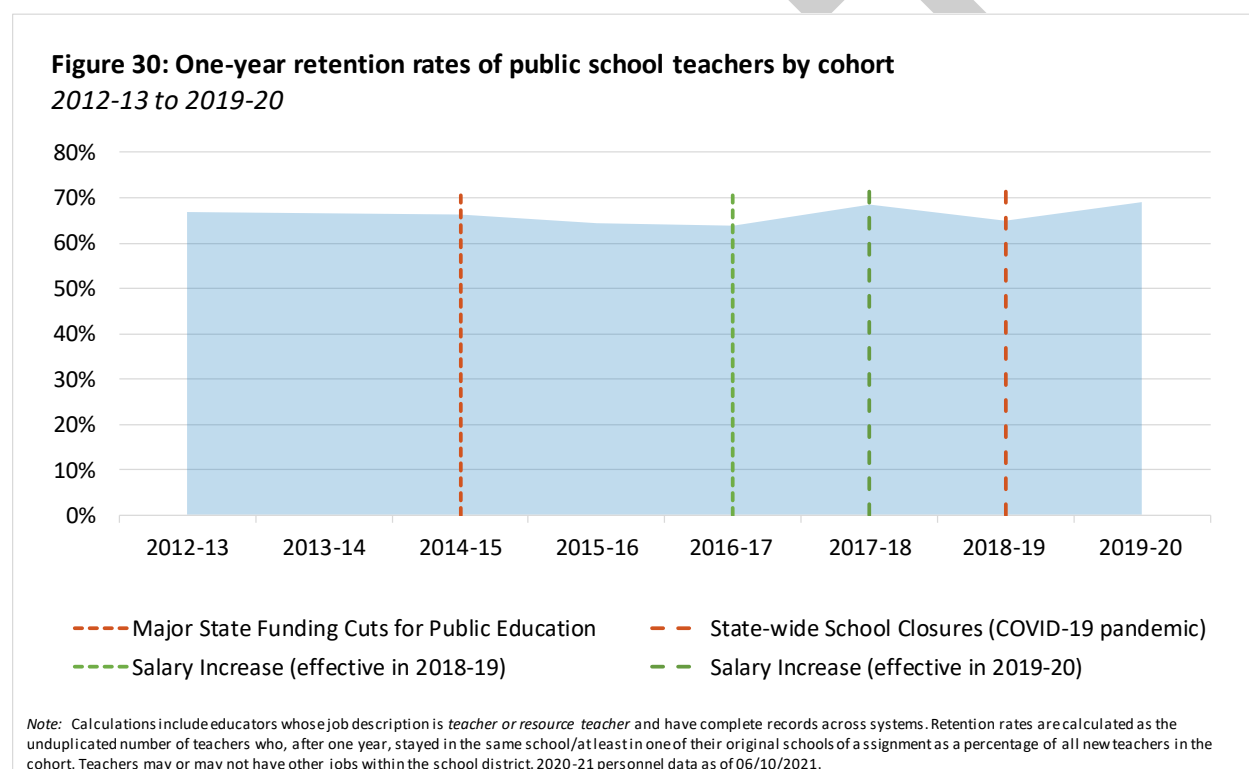
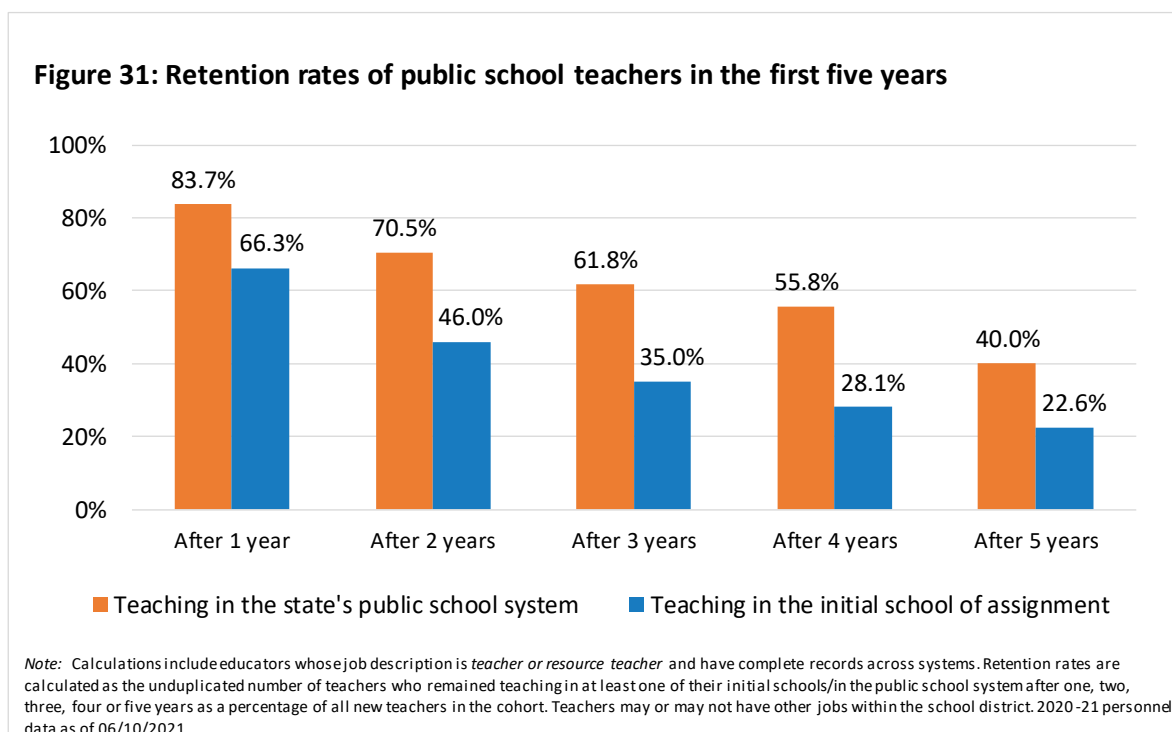


Figure 31 shows how the average retention rate of public school teachers' changes with the number of years of experience. Among all beginning educators between 2012-13 and 2019-20, 66 percent remained teaching—in at least one of their initial schools—after 1 year, 46 percent after 2 years, 35 percent taught after 3 years, 28 percent remained teaching after 4 years, and 23 percent taught after five consecutive years. While about one in every five beginning teachers remained in the same school after 5 years, about two in every five were still teaching in Oklahoma public schools, regardless of whether it was in one of their initial schools of assignment or not. It is important to note that, as the number of years of teaching experience increases, the gap between the retention rate of teachers who remain in the system and those who

remain in the same school consistently widens, except between the last two categories where it drops from 28 to 17 percent. This drop is due to the sharp decrease in the retention rate of teachers who remain in the system after 4 years (56 percent) and after 5 years (40 percent).

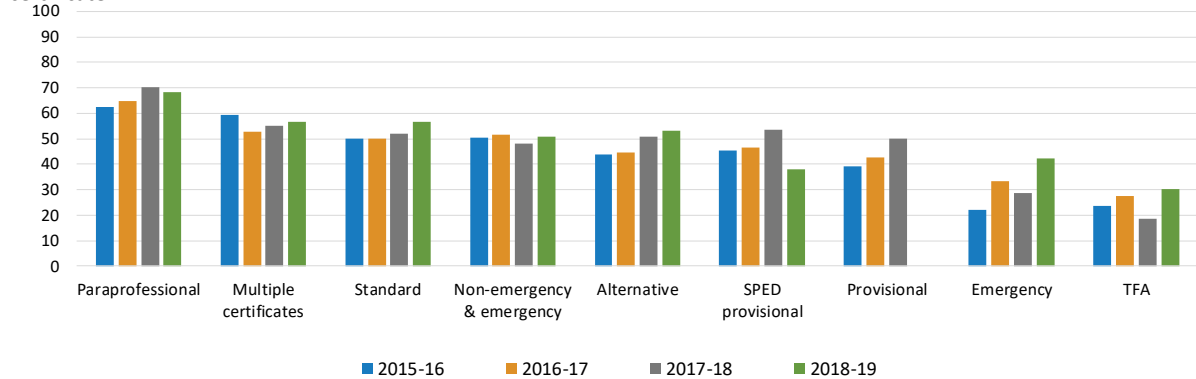


Research shows that teachers' certification type has a direct impact on the retention of beginning teachers: educators who hold a traditional certificate are more likely to stay teaching at the same school than those who hold other certificate types (Guthery & Bailes, 2019). Figure 32 shows the after 2-year mark retention rates for teachers in Oklahoma public schools for cohorts 2015-16 through 2018-19 by type of initial certificate. Since several non-traditional paths for teacher certification include an issuance period of three years or less for either an initial or a one-time certificate –e.g., the Alternative Placement Program, Career Development Program for Paraprofessionals, Emergency Certification, and Teach for America–, the measurement of retention after the first two years provides insightful information about new teacher persistence across different career paths.

Across cohorts, the percentage of beginning teachers who continued to teach after the first two years was the highest for educators following the paraprofessional career path⁷ (66 percent, on average) and the lowest for professionals who teach in Oklahoma through the Teach for America program (25 percent). In the Teach for America program, recent college graduates and professionals of all academic majors and career interests commit to two years to teach in public schools but are issued a five-year standard certificate when all requirements are met (Oklahoma State Department of Education, n.d.-b). The following three categories with the second, third and fourth highest retention rates are *multiple certificates* –emergency excluded– (56 percent), *standard* (52 percent), and *non-emergency & emergency* (50 percent). It is worth noting that among teachers who hold either *multiple certificates* or *non-emergency & emergency* certificates, it is common to find educators with a *standard* certificate. In addition, it is important to keep in mind that the current certificate(s) teachers hold may not necessarily be the same as the initial one. Due to a small number of yearly observations (i.e., fewer than fourteen), the *other* category that encompasses educators who hold one certificate, or a combination of them, that do not fall into the more well-defined options have been excluded from the graph. Although during the period of analysis, there was a general improvement in retention across certificate categories, two of them experienced a persistent increase. The rate of beginning teachers who continued to teach after the first two years changed from 44 percent in 2017-18 (cohort 2015-16) to 53 percent in 2020-21 (cohort 2018-19) for educators whose initial certificate was *alternative*, and from 50 percent in 2017-18 to 53 percent in 2020-21 for teachers whose initial certificate was *standard*. For most certification types, the percentage of teacher stayers after two years was higher for cohort 2018-19 (for which the 2-year mark was in 2020-21) than for cohort 2017-18 (for which the 2-year mark was in 2019-20), except for educators in the *paraprofessional* (65 vs. 70 percent respectively) and *SPED* (37 vs. 53 percent respectively) categories.

⁷ Teaching assistants who want to become a certified teacher in Oklahoma public schools can do so by fulfilling all the requirements of the Career Development Program for Oklahoma Paraprofessionals.

Figure 32: After two-year retention rates of public school teachers by cohort and initial type of certificate



Note: Calculations include educators whose job description is *teacher or resource teacher* and have complete records across systems. Retention rates are calculated as the unduplicated number of teachers who remained teaching in at least one of their initial schools after two years as a percentage of all new teachers in the cohort. Teachers may or may not have other jobs within the school. The alternative and paraprofessional certificate categories include both the initial and standard options in their respective program paths. 2020-21 personnel data as of 06/10/2021.

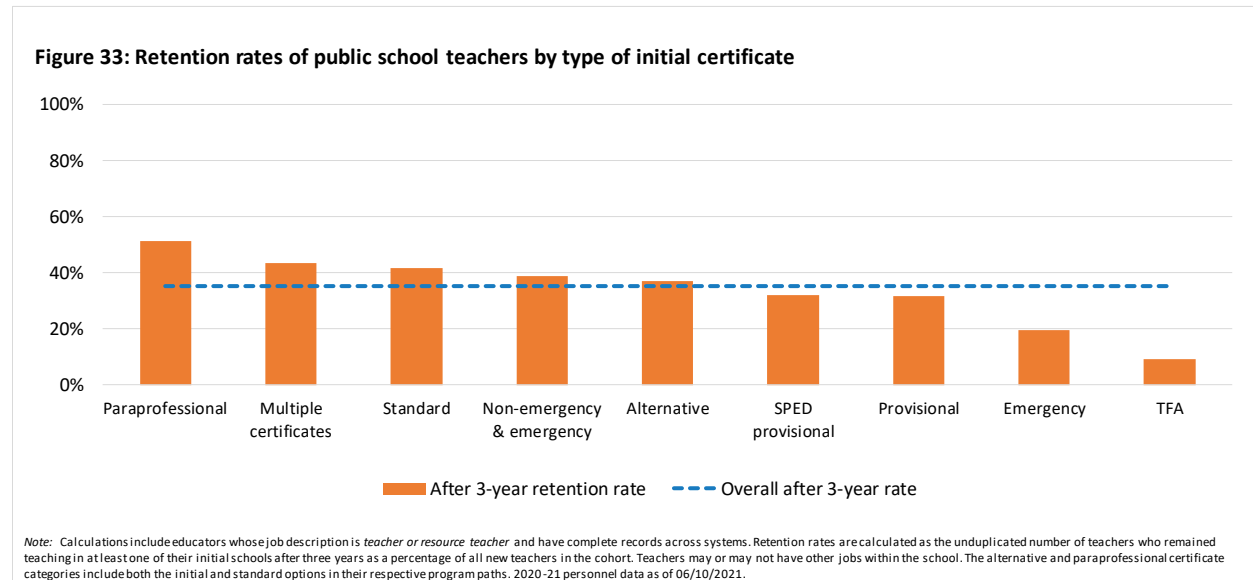
In Oklahoma, career teachers are defined as those with three or more years of experience in one school district. Figure 33 presents data for a slightly revised definition of a career teacher or the percentage of beginning educators who did not leave their school after three years. As with the previous graph, due to a small number of yearly observations (i.e., fewer than eleven), the *other* category that encompasses educators who hold certificates, or a combination of them, that do not fall into the more well-defined options have been excluded from the graph.

Between 2018-19 and 2020-21, the average after 3-year teacher retention rate was 35 percent. There are five certificate types that show a retention rate above that of the overall rate: *paraprofessional* (51 percent), *multiple certificates* (non-emergency) (43 percent), *standard* (41 percent), *non-emergency & emergency* (39 percent), and *alternative* (37 percent).

Paraprofessional is a career path for individuals who are teaching assistants in early childhood, elementary and special education and pursue a teaching certificate that is renewable every five years. Similarly, the alternative path provides an opportunity for individuals with non-teaching degrees to acquire a teaching certificate that is renewable every five years. The *provisional* category includes temporary certificates for non-traditional career paths, or out-of-state teachers, until all requirements are fulfilled.

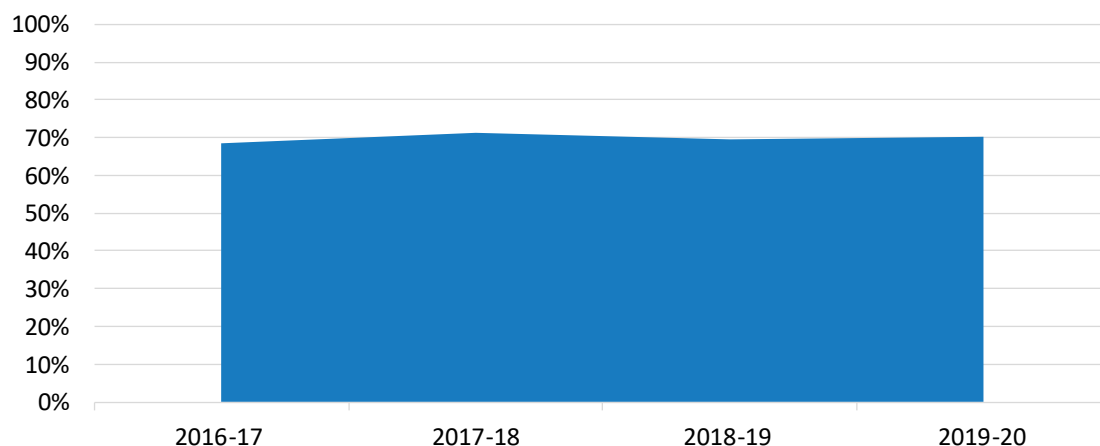
In addition, it is important to note that there is a measurable difference between the retention rate of new teachers with an *emergency* certificate and those holding both *non-emergency & emergency* certificates. While teachers with only an *emergency* certificate have, on average, a 3-year teacher retention rate of 19 percent, teachers with both *non-emergency &*

emergency certificates show, on average, a retention rate of 39 percent. A typical teacher in this category in 2018-19 (the last cohort included in Figure 33) held a standard or an alternative certificate in addition to the emergency certificate.



Counselor Retention. The existent research on school counselor retention suggests that the average number of years a counselor stays at a given school is between 4 and 6 (Jones, 2018). Between 2019-20 and 2020-21, about 70 percent of beginning public school counselors in Oklahoma stayed a counselor in at least one of their initial schools (Figure 34), a rate similar to the overall average during the period of analysis. The one-year retention rate of counselors remained relatively stable over the years, ranging from 69 percent between 2016-17 and 2017-18 to 71 percent between 2017-18 and 2018-19. During the COVID-19 pandemic, about the same percentage of beginning public school counselors stayed as a counselor at the same school relative to the proportion in previous non-pandemic years.

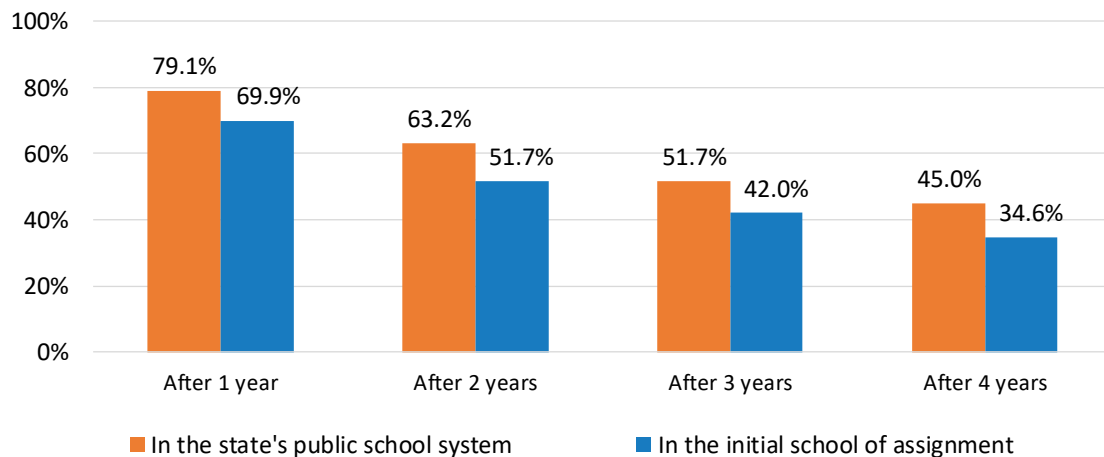
**Figure 34: One-year retention rates, at the same school, of public school counselors by cohort
2016-17 to 2019-20**



Note: Calculations include educators whose job description is *principal* and have complete records across systems. Retention rates are calculated as the unduplicated number of principals who, after one year, stayed in the same school/at least in one of their original schools of assignment as a percentage of all new principals in the cohort. New principals are defined as those educators who were not a school principal in the previous five years. Principals may or may not have other jobs within the school district. 2020-21 personnel data as of 06/10/2021.

When we expand the concept of retention to involve a much broader definition –state perspective as opposed to school perspective–, higher retention rates should be expected. As can be seen in Figure 35, while an average of 70 percent of beginning counselors stayed as counselors in the same school after one year, 79 percent stayed a counselor in the same, or in a different public school, during the same timeframe. The percentage of beginning counselors who remained in their position continuously for four years drops to 45 percent if they are still in the state’s public school system and to 35 percent if these educators are still working as counselors in at least one of their initial schools of assignment.

Figure 35: Average retention rates of public school counselors in the first four years



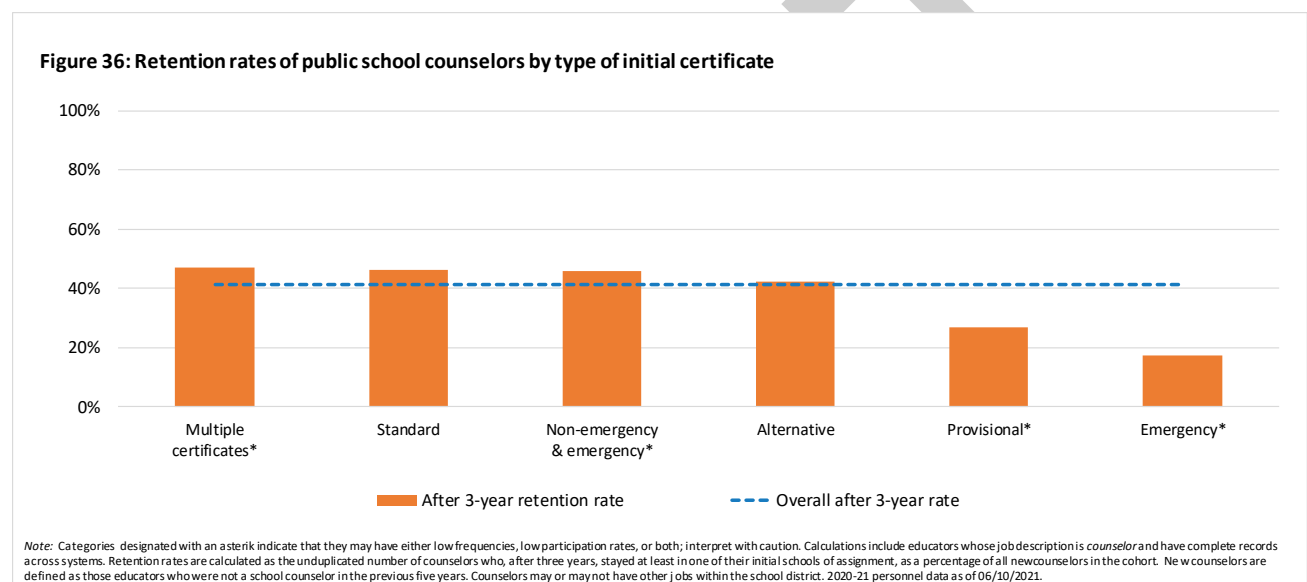
Note: Calculations include educators whose job description is *counselor* and have complete records across systems. Retention rates are calculated as the unduplicated number of counselors who, after one, two, three, or four years, stayed at least in one of their initial schools of assignment/in the public school system, as a percentage of all new counselors in the cohort. New counselors are defined as those educators who were not a school counselor in the previous five years. Counselors may or may not have other jobs within the school district. 2020-21 personnel data as of 06/10/2021.

The percentage of new school counselors who stayed as a counselor in at least one of their initial schools after three years was higher, on average, for those who held multiple non-emergency certificates (47 percent) than for those who did other certificate(s) (Figure 36), of course all of them had the required endorsements or certificate areas. Remember that the same was true, at least to a certain degree, for teachers (39 percent): the retention for those holding *multiple certificates* was the second highest among all categories. In addition, and similar to what we saw in teachers, beginning counselors who hold a *standard* certificate have among the highest retention rates after three years (46 percent). The after 3-year retention rate for certification categories other than the *standard* and *alternative* categories needs to be interpreted with caution as they can have either low frequencies, low participation rates, or both. Please note that the retention rates in Figure 35 are averages across three cohorts of new counselors, i.e., 2015-16, 2016-17, 2017-18.

Between 2018-19 and 2020-21 (i.e., beginning counselors' retention after three years for each cohort), the overall after 3-year teacher retention rate was 41 percent. There are two certificate types that show a retention rate below that of the overall average: *provisional* (27 percent) and *emergency* (17 percent). For the retention of teachers, we saw the exact same

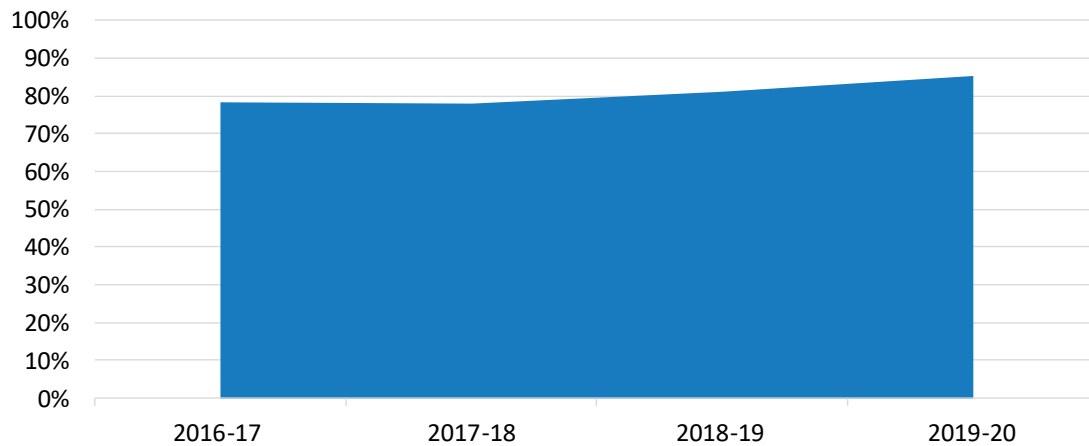
pattern as for counselors: new teachers holding a *provisional* or an *emergency* certificate have the lowest after 3-year retention rates (31 and 19 percent respectively).

Overall, the percentage of public school counselors who stayed as counselors after three years and had a *standard* or an *alternative* certificate was 21 and 9 percentage points higher, respectively, in 2020-21 (cohort 2017-18) than in 2018-19 (cohort 2015-16). During the same period, the retention rate for the remaining certificate categories dropped (not shown in the figures).



Principal Retention. On average, nearly 81 percent of new principals in Oklahoma stay in their schools after one year (Figure 37), a rate that is similar to the most recent national average available of approximately 82 percent (Levin & Bradley, 2019). The one-year retention rate of principals who entered the profession in 2019-20—or those who did not work as a principal in the previous five years—was 85 percent, the largest rate in the period of analysis. This rate was 78 percent for cohorts 2016-17 and 2017-18, and 81 percent for cohort 2018-19. When comparing data across educator categories from 2016-17 to 2019-20, the retention rate of new principals increased faster (7 percentage points) than teachers’ (5 percentage points) and counselors’ (2 percentage points).

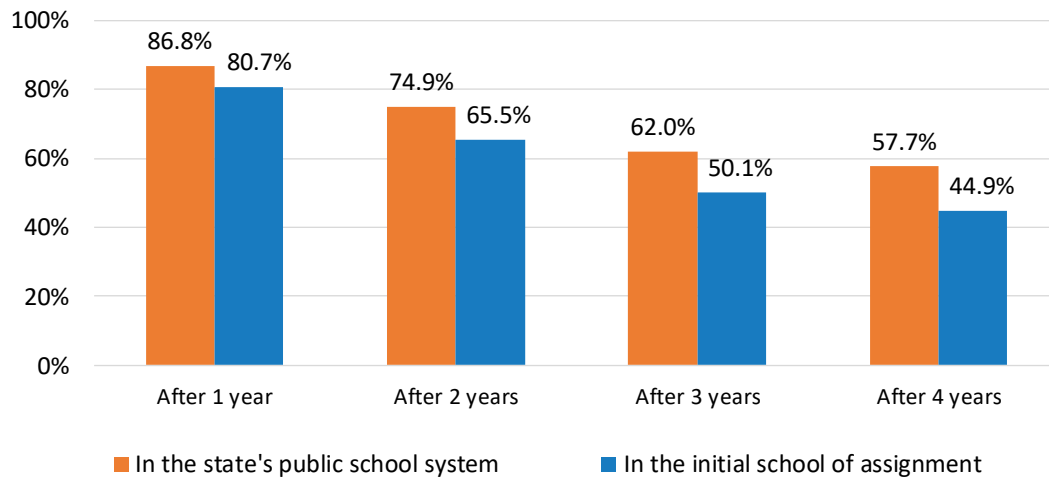
Figure 37: One-year retention rates, at the same school, of public school principals by cohort
2016-17 to 2019-20



Note: Calculations include educators whose job description is *principal* and have complete records across systems. Retention rates are calculated as the unduplicated number of principals who, after one year, stayed in the same school/at least in one of their original schools of assignment as a percentage of all new principals in the cohort. New principals are defined as those educators who were not a school principal in the previous five years. Principals may or may not have other jobs within the school district. 2020-21 personnel data as of 06/10/2021.

Looking at data of more than 900 Oklahoma principals who entered the profession between 2016-17 and 2019-20, we found that while the retention rate of principals who stay in their schools after 1 year is 6 percentage points lower than the rate of principals who stay in the state's public school system in the same timeframe, the difference widens to 13 percentage points after 4 years (Figure 38). New principals staying in the public school system showed the smallest decline (29 percentage points) in their retention rate between after 1 year versus after 4 years, as compared to counselors (34 percentage points) and teachers (44 percentage points).

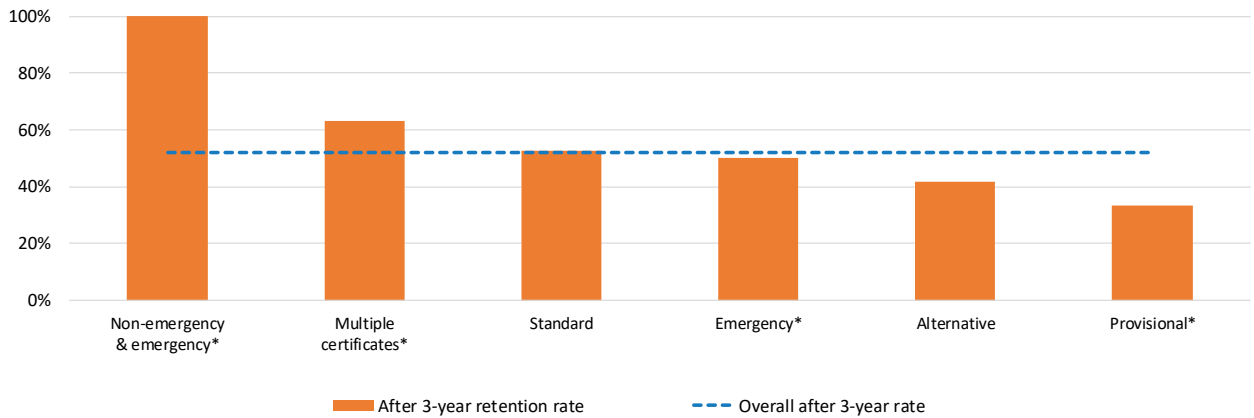
Figure 38: Average retention rates of public school principals in the first four years



Note: Calculations include educators whose job description is *principal* and have complete records across systems. Retention rates are calculated as the unduplicated number of principals who, after one, two, three, or four years, stayed at least in one of their initial schools of assignment/in the public school system, as a percentage of all new principals in the cohort. New principals are defined as those educators who were not a school principal in the previous five years. Principals may or may not have other jobs within the school district. 2020-21 personnel data as of 06/10/2021.

On average, 53 percent of public school principals in Oklahoma, who hold a *standard* certificate as their first issued certificate, continue working as principals at least in one of their initial schools after three years; the percentage drops to 42 percent for principals with an *alternative* certificate as their starting principalship certification (Figure 39). As already mentioned, the current certificate of retained principals may or may not be the same as the initial one. When compared to teachers and counselors on the most common certificate categories, the after 3-year retention rate of principals is also among the highest for educators with a *standard* certificate (53 vs. 42 and 46 percent, respectively) than for educators with an *alternative* certificate (42 vs. 37 and 42 percent, respectively). Please note once again that the after 3-year retention rate for other certification categories needs to be interpreted with caution as they have either low frequencies, low participation rates, or both. For example, new principals in the *non-emergency & emergency* or in the *multiple* certificates category in 2019-20, accounted for 1 percent (3 principals) and 2 percent (4 principals) of all beginning principals, respectively. In addition, all principals included in the analysis had the required endorsements or certificate areas valid for the year under analysis.

Figure 39: Retention rates of public school principals by type of initial certificate



Note: Categories designated with an asterisk indicate that they may have either low frequencies, low participation rates, or both; interpret with caution. Calculations include educators whose job description is *principal* and have complete records across systems. Retention rates are calculated as the unduplicated number of principals who, after three years, stayed at least in one of their initial schools of assignment, as a percentage of all new principals in the cohort. New principals are defined as those educators who were not a school principal in the previous five years. Principals may or may not have other jobs within the school district. 2020-21 personnel data as of 06/10/2021.

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Part II: Supply

The question about how to ensure a supply of high-quality educators sufficient to meet the demand was relevant long before the COVID-19 pandemic and it is critical today, more than ever before, because of the profound, uneven, and multifaceted challenges COVID-19 is imposing on educational opportunity and achievement (Goldberg, 2021a). The supply of educators can be defined as the number of eligible and available individuals –from all sources– who are willing to offer their services under prevailing conditions (Boe & Gilford, 1992). In practice, what is known with precision is the total number of educators who are hired annually. For example, the educator workforce in public school classrooms across the state in the 2020-21 academic year was close to 54,250. This number includes eligible individuals who applied for open positions and were newly hired (i.e., new educators), and those who stayed from the previous year (i.e., stayers).

In this section, the dynamics of the current and past teaching force are evaluated by identifying its overall trends and composition, including educator demographics –with special attention paid to the racial and ethnic diversity of the teacher workforce vis-à-vis students–, qualifications and likelihood of job diversification within the school system. Further, the analysis of the disaggregation of the supply by its two main factors, i.e., new and continuing educators (also referred to as stayers) is presented. In addition, information about teacher preparation programs – a critical source of educator supply– is summarized. As it was the case for the demand-side factors, key data analyses carried out for teachers are replicated for principals and counselors. Caution is warranted in data interpretation, especially when using raw numbers, since data for school year 2020-21 were still preliminary when the data preparation process for analysis started.

Despite the drop in the number of public-school teachers first in 2016-17 due to major state funding cuts for public education, and again in the most recent school year due to the COVID-19 pandemic, the teaching workforce in 2020-21 was about 3 percent, or close to 1,200 teachers, higher than in 2012-13. Most major trends observed for all certified staff and teachers between 2012-13 and 2020-21 are also true for school counselors and principals, with the latter group showing a more robust positive trend ending the period with 7 percent more principals than eight years ago. Despite the overall positive workforce trends, especially in recent years, about 10 and 3 percent of schools in 2020-21 did not have a school counselor or principal, respectively. Public school educators are increasingly working in multiple schools doing the same job; this is true for teachers and principals. School counselors, on the contrary, are less likely than in the past to work

in multiple sites and to hold more than one job. The education workforce is getting younger while the number of years of experience remains steady across all the educator role groups studied. The percentage of public-school teachers, counselors and principals of color is increasing but at a pace slower than the students, especially for students of Hispanic descent. Pre-pandemic certificate participation rate trends continued in 2020-21, including a persistent decline in the share of teachers, counselors and principals with a standard certificate in total population; a larger percentage of teachers and counselors who were emergency certified; and an increase in the percentage of teachers and principals holding an alternative certificate. An overall upward movement in the participation of new hires on the overall supply from 2016-17 to 2019-20 was observed for teachers, counselors and principals. Likewise, in 2020-21, the shifts in trends were highly similar across educator subgroups; the participation rate of new hires dropped across the board, most notably among counselors. The percentage of educators with a standard certificate in all three role groups was lower among new hires than among stayers, while the percentage of teachers and counselors with an emergency certificate was higher among new hires than among stayers. The contrasting differences observed in the certificate distribution between new hires and stayers can be largely explained by changes in new hires' certificate type trends. Consistent with national-level trends, the public-school teaching workforce in the state is becoming more diverse and younger largely due to the growth in the percentage of new teacher hires from minority backgrounds and with younger ages. Across years, the distribution of certificate areas among Oklahoma teachers has changed with most of them either improving or keeping the same rank; the subject areas with the largest changes in ranking order include Psychology/Sociology, English as a Second Language, Spanish, Grammar/Composition, Learning Disability, Mentally Handicapped, and Oklahoma History.

Between 2012-13 and 2017-18, fewer college graduates earned an education degree in Oklahoma for a total decline of more than one-fifth. Between 2017-18 and 2020-21, there was a complete shift in graduation trends, and the total number the students completing teacher preparation programs in the state increased, on average, at an annual rate of 3 percent. However, not all graduating institutions experienced the same positive trend, nor have the trends been consistent across years, educator roles, specializations or academic degrees.

Workforce Trends: Teachers

Teacher Employment

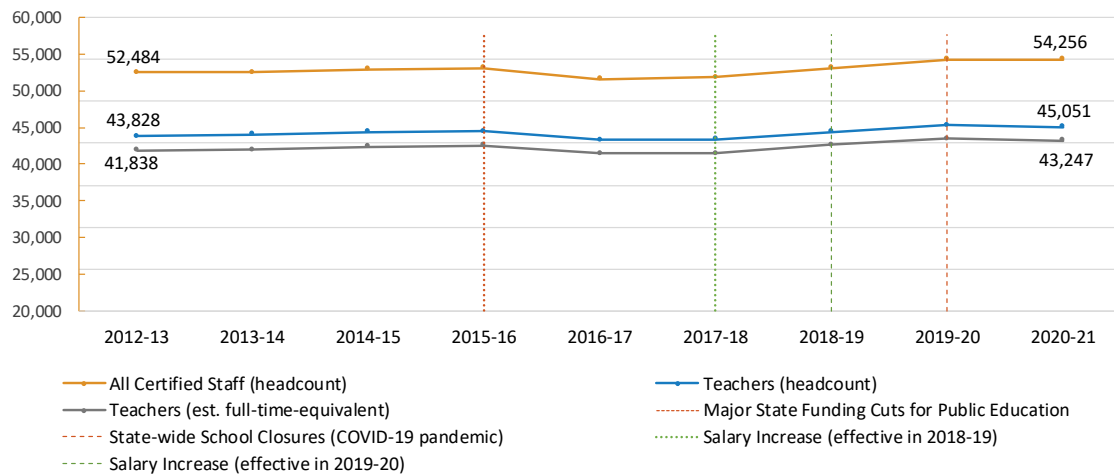
In the 2020-21 school year, more than 45,000 full-and part-time teachers worked in Oklahoma public schools—including about 24,900 teachers working in elementary schools, 23,400 in secondary schools and 5,000 in virtual charter schools⁸—representing 83 percent of the total certified staff population (Figure 1). The remaining 17 percent – i.e., the vertical difference between the orange and the grey lines in Figure 1 – includes, among other staff, school-level administrators (4 percent), counselors (3 percent), librarians (2 percent), speech-language pathologists (1 percent), and instructional coaches (1 percent).

In the aggregate and despite the drop in the number of public-school teachers in 2016-17 due to major state funding cuts and again in 2020-21 due to the COVID-19 pandemic (i.e., more than 200 fewer teachers than in 2019-20), the teaching workforce in 2020-21 was about 3 percent, or close to 1,200 teachers, higher than in 2012-13 (Figure 12). While the two consecutive pay raises for public schools' certified personnel during 2017-18 and 2018-19 certainly helped restore workforce growth, the impact of the COVID-19 pandemic decelerated the positive outlook.

Figure 1 also shows that the trends in the unduplicated headcount of teachers and the number of full-time-equivalent (FTE) teachers are almost parallel to the trends in the number of all certified staff. This pattern continued in 2020-21 with small nuances. Although all three-workforce metrics mildly declined between 2019-20 and 2020-21, the largest year-over-year drop occurred in the unduplicated number of teachers (0.5 percent or some 210 teachers) and the full-time-equivalent number of teachers (0.5 percent or some 200 FTE teachers), followed by a negligible decline of <0.1 percent in the remaining variable, i.e., certified staff.

⁸ The numbers do not add up to 100 percent because some educators teach in multiple schools and/or school levels.

Figure 1: Education workforce
2012-13 to 2020-21



Note: Calculations include all staff who have a base salary (non-virtual charter schools) or contracted services (virtual charter schools), and have complete records across systems. Educators may or may not have other jobs within the school district. 2020-21 personnel data as of 07/13/2021. The FTE count is an estimate due to incomplete data from some school districts.

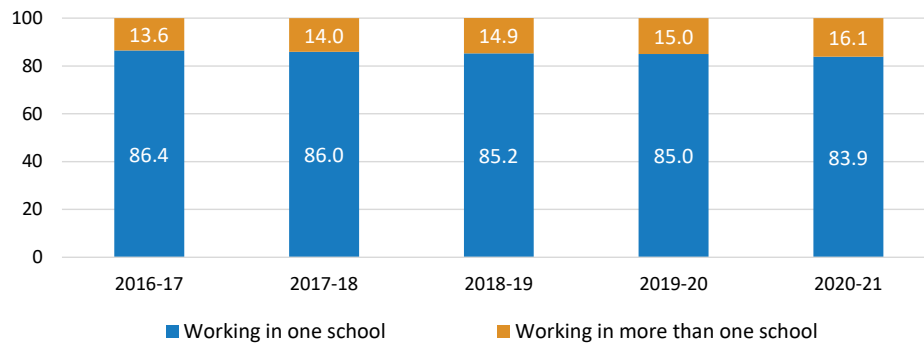
Job Diversification of All Certified Staff

It is not unusual that educators, as other workers, look for additional sources of income from their schools or districts, taking on jobs during the summer, working in multiple schools, or taking several roles throughout the school year. It is beyond the scope of this work to address jobs outside the school system, whether they are in the education field or not.

In Oklahoma, public school educators are increasingly working in multiple schools doing the same job.⁹ Figure 2 shows recent trends in the percentage distribution of public-school certified staff by the number of schools for which they worked. In 2020-21, about 16 percent of all certified staff was working in more than one school and usually in the same district, approximately 3 percent higher than the corresponding rate in 2016-17 (i.e., some 1,600 more educators), which remained unchanged since 2012-13. The most common number of schools the certified staff worked for in 2020-21 was 2 (87 percent) and 3 (10 percent).

⁹ No claim is being made about the educators' FTE.

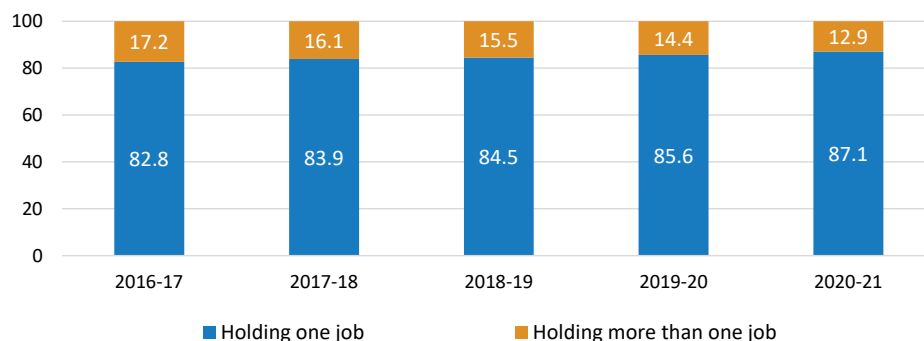
Figure 2: Percentage distribution of public schools' certified staff by number of schools they work with 2016-17 to 2020-21



Note: Calculations include educators who have a base salary, and have complete records across systems. 2020-21 personnel data as of 01/10/2020.

While the diversification of roles for educators who work in one school has remained relatively stable in the last few years (i.e., less than 2 percent of them took on a second or third job every year between 2016-17 and 2020-21), the percentage of educators working in multiple sites and receiving compensation for additional jobs has trended downward during the same time period (Figure 3). The number of public-school educators holding more than one job in 2020-21 was about 4 percent lower than in 2016-17, an average annual drop of about 1 percent. Amongst the most common job combinations in 2020-21 were: teacher and resource teacher; teacher and athletic coach; teacher and librarian; teacher and principal; teacher and counselor; teacher and remedial specialist; and teacher and teacher trainer or instructional coach.

Figure 3: Percentage distribution of public schools' certified staff working in more than one school by number of jobs 2016-17 to 2020-21



Note: Calculations include educators who have a base salary, and have complete records across systems. 2020-21 personnel data as of 01/10/2020.

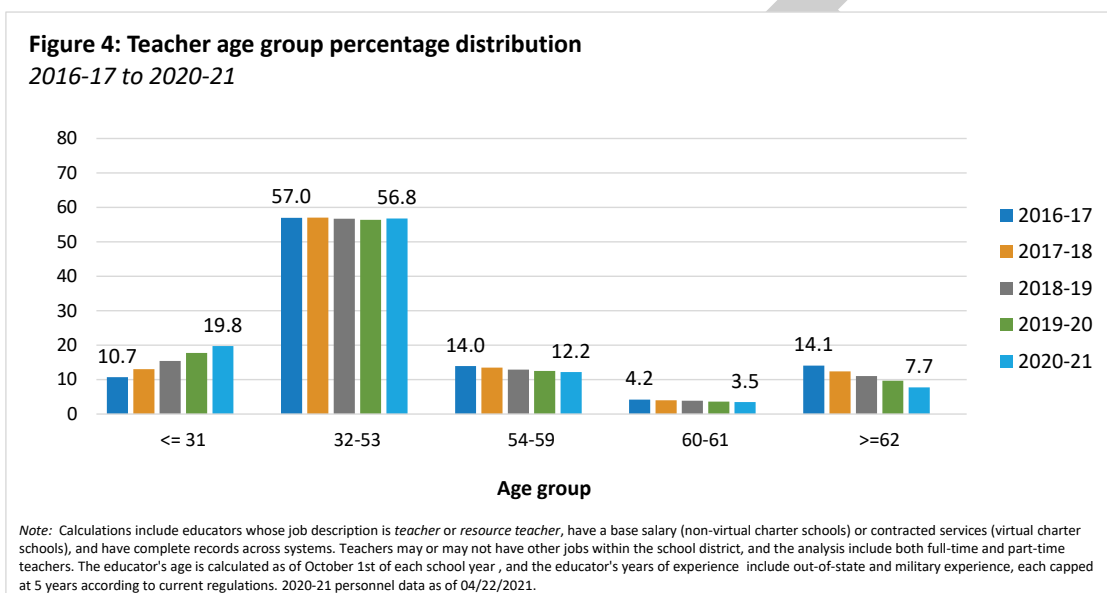
The composition of the teaching workforce is vital to understanding the attributes of educators, how those attributes may be changing over time, and their impact on teacher recruitment, retention and costs (Organization for Economic Cooperation and Development, 2005). The relevance of factors such as age and experience comes from different sources, including the current compensation system for educators, promotion decisions and employability (Fugate, Kinicki, & Ashforth, 2004), all of which are structured to reward career service. Improved learning outcomes, through enhanced educator effectiveness, is arguably the most critical factor in explaining experience importance (Rice, 2009). There is strong evidence of the long-lasting positive effects of more experienced teachers on both students and schools. This proof is especially true when teachers work in a supportive, collegial environment and accumulate relevant experience in the same grade, subject or district (Podolsky, Kini, & Darling-Hammond, 2019). Teaching qualifications, including certification, have also been found to improve student's achievement, although to a limited extent (Clotfelter, Ladd, & Vigdor, 2010; Kane, Rockoff, & Staiger, 2008; Goe, 2007). A teacher workforce racial and ethnic composition that matches that of the students taught can provide significant benefits on short- and long-term outcomes particularly for minority students who are often underrepresented (National Academies of Sciences, Engineering, and Medicine, 2019; Egalite & Kisida, 2018; Gershenson, Jacknowitz, & Brannegan, 2017; Egalite, Kisida, & Winters, 2015; Goldhaber & Hansen, 2010). Racial and ethnic diversity among educators has several academic and non-academic benefits for all students and the community (U.S. Department of Education, Office of Planning, Evaluation and Policy Development, 2016; Dee, 2004).

Following is an examination of the distribution of teachers across selected age groups, race and ethnic backgrounds in comparison to those of students, years of experience, type of certification, and education level. Similar analyses applied to counselors and principals are presented in subsequent sections.

Teachers' Age Composition

In recent years, the long aging trend of the U.S. teaching force has reversed, and the age distribution has spread out (Ingersoll, Merrill, Stuckey, & Collins, 2018). Similar demographic changes are also evident in Oklahoma. In 2016-17, the average age of primary and secondary school teachers was 47, 3 years older than in the most recent school year (2020-21). Likewise, while teachers 54 and over accounted for 32 and 23 percent of the teacher population in 2016-17

and 2020-21, respectively, teachers aged 31 or younger represented 23 and 20 percent in 2016-17 and 2020-21, respectively (Figure 4). It is worth noting that young teachers, the only age group with an increase in participation from 2016-17 and 2020-21, almost doubled their share in the workforce during this period. The majority of teachers, however, continues to be in the second younger age group: in both 2016-17 and 2020-21, more than half of all school teachers were in the 32 to 53 age category.



Race and Ethnicity of Teachers and Students

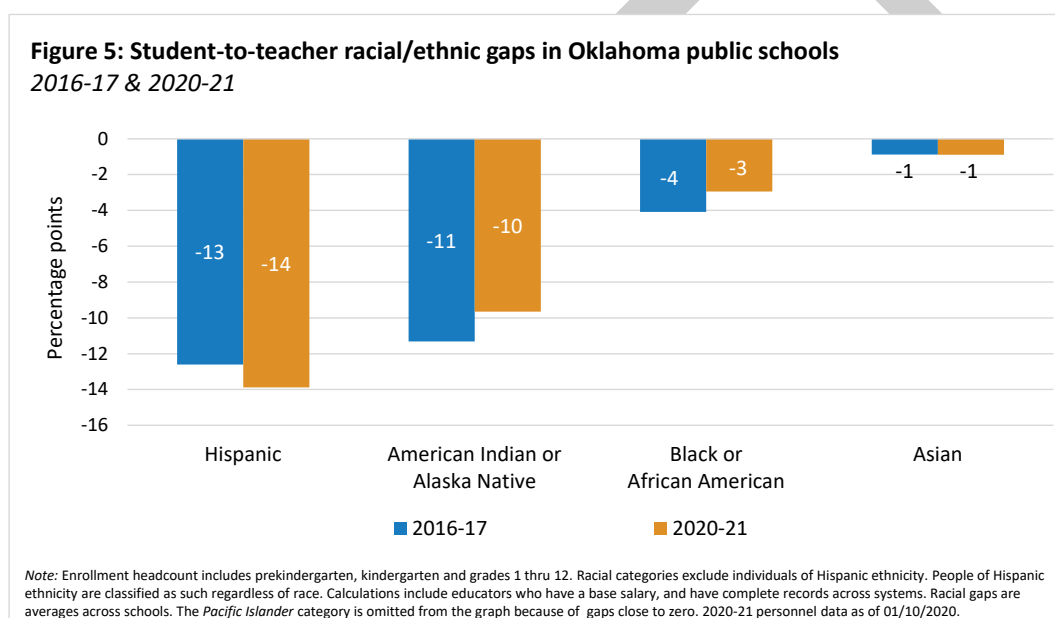
In Fall 2016, the public schools' enrollment in Oklahoma shifted for the first time to a majority of nonwhite students. Recent data show that, despite the critical change in the demographics of the state's classrooms, 99 percent of schools have a higher percentage of students of color than teachers of color.¹⁰

During the 2020–21 school year, about 85 percent of teachers were White, 6 percent were American Indian/Alaska Native, and 4 percent were Black. Those who were Hispanic or of Two or more races each made up 2 percent of public-school teachers, and those who were Asian or Pacific Islander made up 1 or less than 1 percent of public-school teachers, respectively (not shown in figures). While the percentage of teachers of color was higher in 2020-21 than in 2016-17 (15 vs. 14 percent), the percentage of students of color keeps growing at a faster pace (53 vs. 51

¹⁰ Individuals of *color* in this report refer to individuals who do not self-identify as non-Hispanic white.

percent) (see *Section: Demand, Figure 5*), further widening the racial and ethnic gaps that already exist in the K-12 education public system.

Figure 5 depicts the average student-to-teacher racial and ethnic gaps across public schools in 2016-17 and 2020-21.¹¹ The gap for Hispanic students is the highest in both years, and it is worsening (13 vs. 14 percent). In contrast, the gaps for American Indians/Alaskan Natives or Blacks/African Americans improved each by 1 percentage point, dropping from 11 to 10 percent and from 4 to 3 percent, respectively. The student-to-teacher percentage gap for Asians was not measurably different across these two school years.



Schools' student-to-teacher racial and ethnic gaps significantly vary by school poverty level (Table 1). The gaps are highest in high poverty schools, and they decrease as the school poverty level improves, also true for both school years 2016-17 and 2020-21. The exception are the gaps for Asians which deteriorate with lower concentrations of school poverty.

While the racial and ethnic gaps for Asians, Blacks and Pacific Islanders in high poverty schools are practically the same between 2016-17 and 2020-21, and the gaps for American Indians/Alaskan Natives in high poverty schools are improving (12 vs. 15 percent), the gaps for Hispanics in schools with high concentration of disadvantaged students are worsening between these two years (21 vs. 14 percent). As noted, the enrollment rate of Hispanics in high poverty

¹¹ The student-to-teacher racial and ethnics gaps are the difference between the rate of teachers and the rate of students.

schools is the highest across races (41 percent in 2020-21), and steadily decreases with decreasing school poverty level; this may help explain the worsening trend for this ethnic group.

In addition, racial/ethnic gaps in public schools vary by school locale. Table 2 lists the student-to-teacher racial and ethnic gaps by school locale classification in 2016-17 and 2020-21. Although the overall trends across locale remained unchanged for all race and ethnic groups –for example, as the urbanity of the school location increases, gaps for Hispanics and Blacks also increase, but they decrease for American Indians/Alaskan Natives–, the racial/ethnic diversity in the student populations, vis-à-vis teacher populations, are improving for all but one group of students. The gaps for Hispanics enrolled in city, suburbs and town schools have all deteriorated between 2016-17 and 2020-21 (29 vs. 32, 11 vs. 13 and 13 vs. 14, respectively).

Table 1: Student-to-teacher racial and ethnic gaps by school poverty level

2016-17 & 2020-21

[Percentage points]

	Hispanic		American Indian/Alaska Native		Asian		Black/African American		Pacific Islander	
	2016-17	2020-21	2016-17	2020-21	2016-17	2020-21	2016-17	2020-21	2016-17	2020-21
High poverty	-14.5	-20.9	-15.3	-11.5	-0.2	-0.2	-4.3	-3.6	-0.2	-0.3
Mid-high poverty	-12.8	-11.8	-11.3	-10.7	-0.7	-0.6	-4.1	-2.9	-0.1	0.0
Mid-low poverty	-12.8	-10.5	-7.1	-6.8	-1.9	-1.6	-3.6	-2.4	-0.2	-0.1
Low poverty	-6.1	-8.1	-4.8	-2.5	-2.8	-4.1	-4.4	-2.9	-0.1	-0.1

Note: Enrollment headcount includes prekindergarten, kindergarten and grades 1 thru 12. Racial categories exclude individuals of Hispanic ethnicity. People of Hispanic ethnicity are classified as such regardless of race. Calculations include educators who have a base salary, and have complete records across systems. Racial gaps are averages across schools. 2020-21 personnel data as of 01/10/2020.

Table 2: Student-to-teacher racial and ethnic gaps by school locale

2016-17 & 2020-21

[Percentage points]

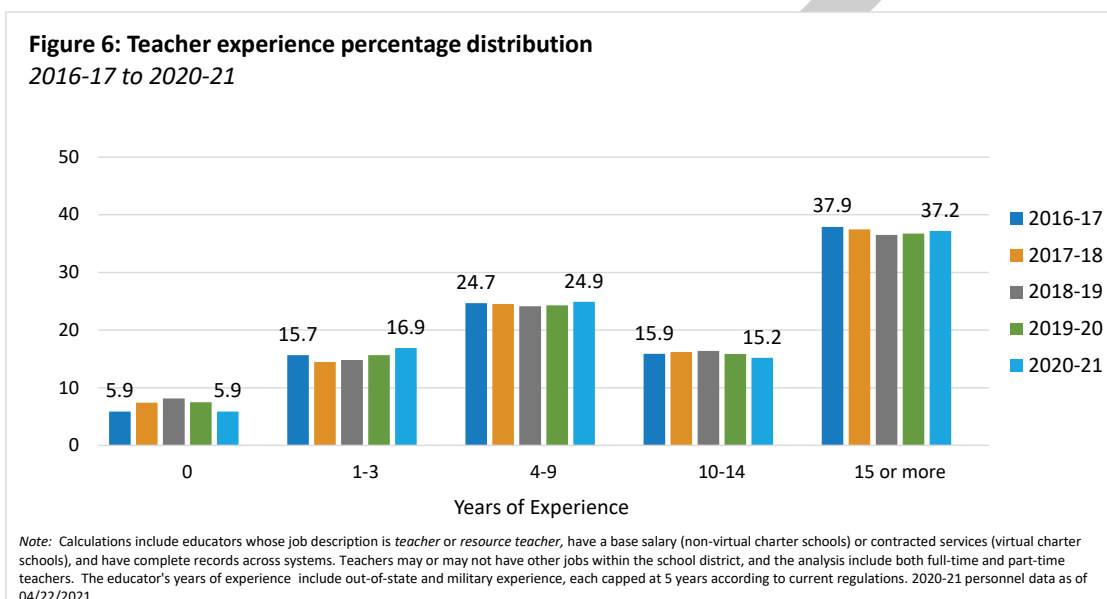
	Hispanic		American Indian/Alaska Native		Asian		Black/African American		Pacific Islander	
	2016-17	2020-21	2016-17	2020-21	2016-17	2020-21	2016-17	2020-21	2016-17	2020-21
City	-28.8	-32.3	-0.6	-0.5	-1.8	-1.4	-11.9	-7.6	-0.2	-0.4
Suburb	-11.2	-13.4	-4.8	-2.9	-1.7	-2.1	-6.7	-5.4	-0.1	0.0
Town	-13.1	-14.2	-13.5	-11.5	-0.7	-0.7	-2.8	-2.1	-0.6	-0.7
Rural	-7.9	-8.5	-15.2	-13.2	-0.5	-0.5	-1.6	-1.3	0.0	0.1

Note: Enrollment headcount includes prekindergarten, kindergarten and grades 1 thru 12. Racial categories exclude individuals of Hispanic ethnicity. People of Hispanic ethnicity are classified as such regardless of race. Calculations include educators who have a base salary, and have complete records across systems. Racial gaps are averages across schools. 2020-21 personnel data as of 01/10/2020.

Experience of Teachers

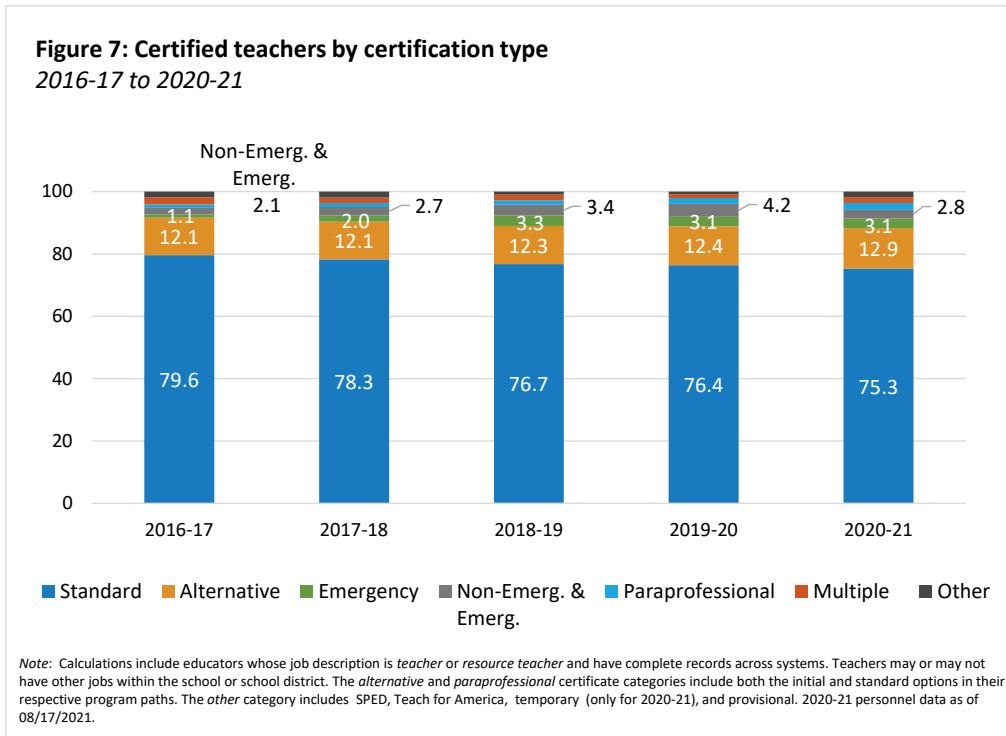
Figure 6 displays the percentage distribution of teachers in public and elementary schools by years of teaching experience from 2016-17 to 2020-21. In 2016-17, about 22 percent of public-school teachers had 3 or fewer years of experience, 25 percent had 4 to 9 years of experience, 16

percent had 10 to 14 years of experience, and 38 percent had 15 or more years of experience. Marginally higher percentages of teachers in 2020-21 than in 2016-17 had 3 or fewer years of experience (23 vs. 22 percent). There was no measurable difference between 2016-17 and 2020-21 in the percentage of teachers in other experience categories. Aligned with these results, public school teachers in Oklahoma had on average in 2020-21 13 years of experience, still the same as five years ago.

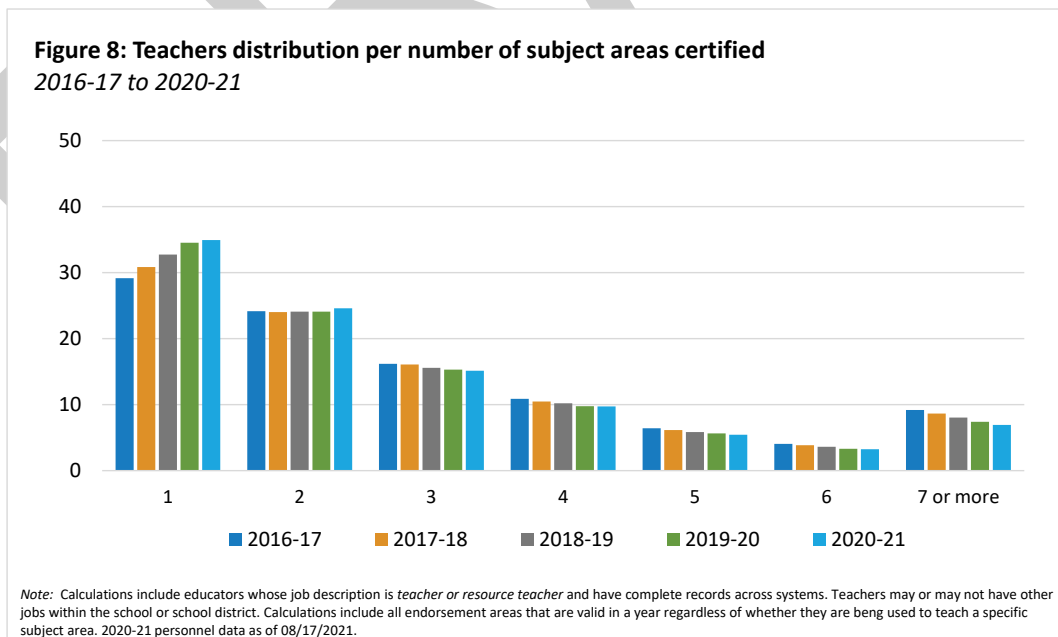


Certification Status of Teachers

Of the more than 45,000 public school teachers in 2020-21, about 75 percent held a *standard* certification, 13 percent had an *alternative* certification, 3 percent held an *emergency* teaching certificate, 3 percent had both *non-emergency* and *emergency* certificates, and 2 percent each held a *paraprofessional* certificate or *multiple* certificates (Figure 7). A lower percentage of teachers in 2020-21 compared to 2016-17 held a *standard* certificate (75 vs. 80 percent). The participation rate of most of the remaining certification categories increased slightly, with the largest increase being for the *emergency* category (1 percent in 2015-16 vs. 3 percent in 2020-21). In most cases, pre-pandemic certificate participation rate trends continued in 2020-21. For example, the percentage of teachers holding a *standard* certificate continued its steady decline, while the participation for teachers with an *alternative* certificate continued to gradually increase.

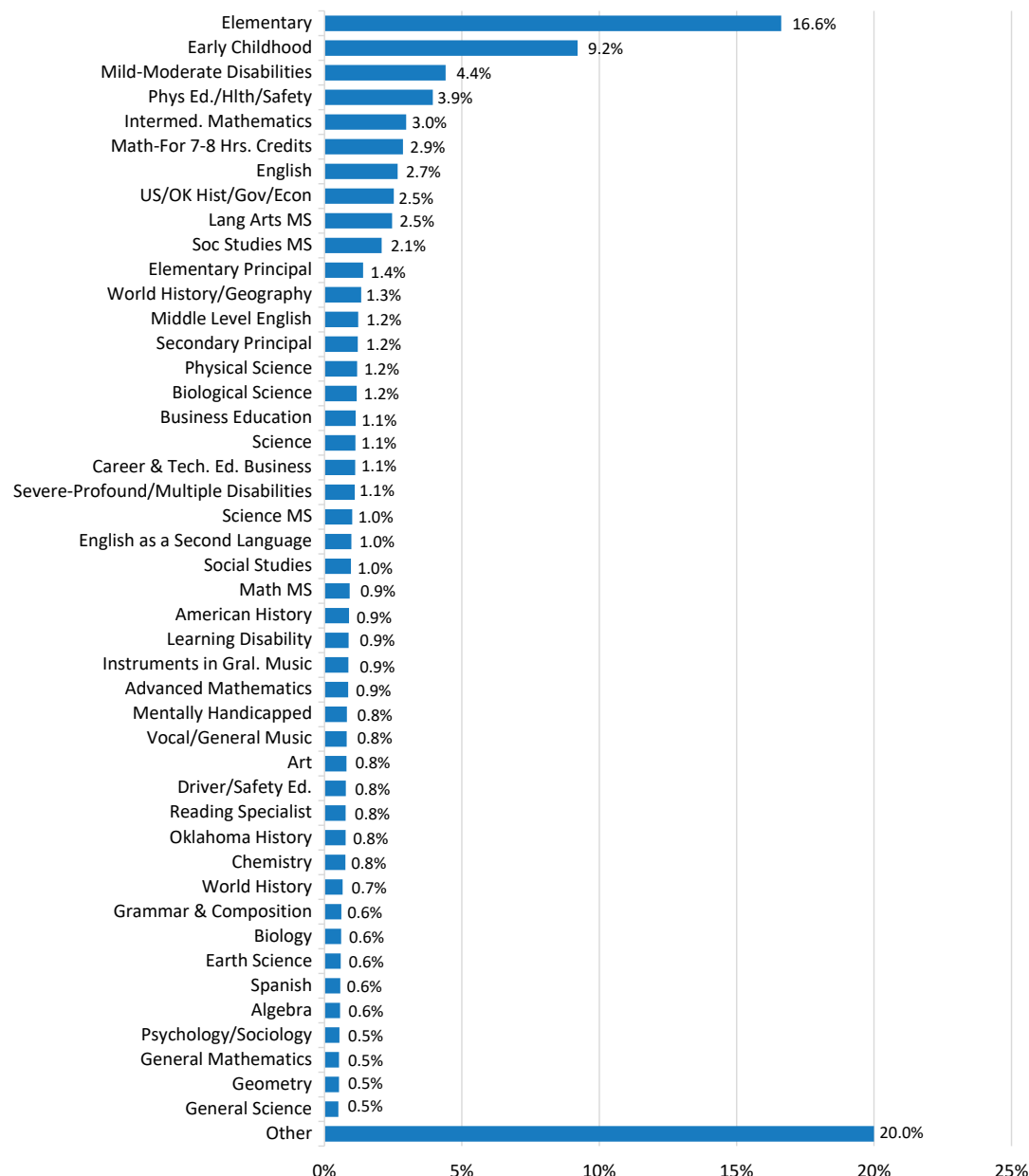


Oklahoma teachers are often certified in multiple subject areas in a single year (Figure 8). Although the percentage of such educators has consistently dropped since at least 2016-17 (Lazarte-Alcalá, 2018), the vast majority—more than 3 in 5—continue to hold certifications in two or more subject areas. The percentage of teachers holding one certified area has increased from 29 to 35 percent between 2016-17 and 2017-18.



Across years, the distribution of certificate areas among Oklahoma teachers has changed with most of them either improving or keeping the same rank (Figure 9). In comparison to 2016-17, in 2020-21 41 percent moved up spots (most of them at least three spots), 24 percent retained their ranking, and 35 percent dropped their place. The subject areas with the largest changes in ranking order include Psychology/Sociology (43rd in 2020-21 vs. 68th in 2016-17), English as a Second Language (23rd vs. 36th), Spanish (41st vs. 50th), Grammar/Composition (38th vs. 29th), Learning Disability (27th vs. 18th), Mentally Handicapped (30th vs. 22nd), and Oklahoma History (35th vs. 27th). Figure 9 shows the percentage distribution of certificate areas or endorsements in 2020-21 and reveals a pattern also observed in previous years, which is the relative concentration of certificates in the Elementary subject area (17 percent) and, far behind in second place, the Early Childhood subject area (9 percent). It is worth noting that while the top STEM subjects such as mathematics and science content areas represent in 2020-21 3 percent (Intermediate Mathematics) and 1 percent (Mathematics for 7th and 8th grades, hrs. credit) of all the areas teachers are qualified to teach, subjects like General Science, Geometry, and General Mathematics have among the lowest frequencies in 2020-21, each representing close to 1 percent. The frequency distribution of the endorsements teachers had in 2020-21 to teach students with learning disabilities followed a similar pattern: it shows some subjects have relatively high participation rates (e.g., Mild-Moderate Disabilities, 4 percent) but others show more modest rates (e.g., Severe-Profound/Multiple Disabilities, Learning Disability; and Mentally Handicapped, all with a participation rate of about 1 percent of all subject areas). The other category in 2020-21 includes as many as 157 subject areas, each with a participation percentage of 0.5 percent or less; among those areas are, for example, Counselor (0.5 percent), Autism (0.5 percent), Family & Consumer Sciences (0.5 percent), Geography (0.5 percent), and American Literature (0.5 percent). The complete list of subject areas that comprised the other category and their respective percentages for 2020-21 are listed in Appendix B.

Figure 9: Subject areas distribution for teachers
2020-21



Note: Calculations include educators whose job description is *teacher* or *resource teacher* and have complete records across systems. Teachers may or may not have other jobs within the school or school district. Calculations include all endorsement areas that are valid in a year regardless of whether they are being used to teach a specific subject area. The *other* category includes certified areas with a participation rate that falls below 0.5 percent. 2020-21 personnel data as of 08/17/2021.

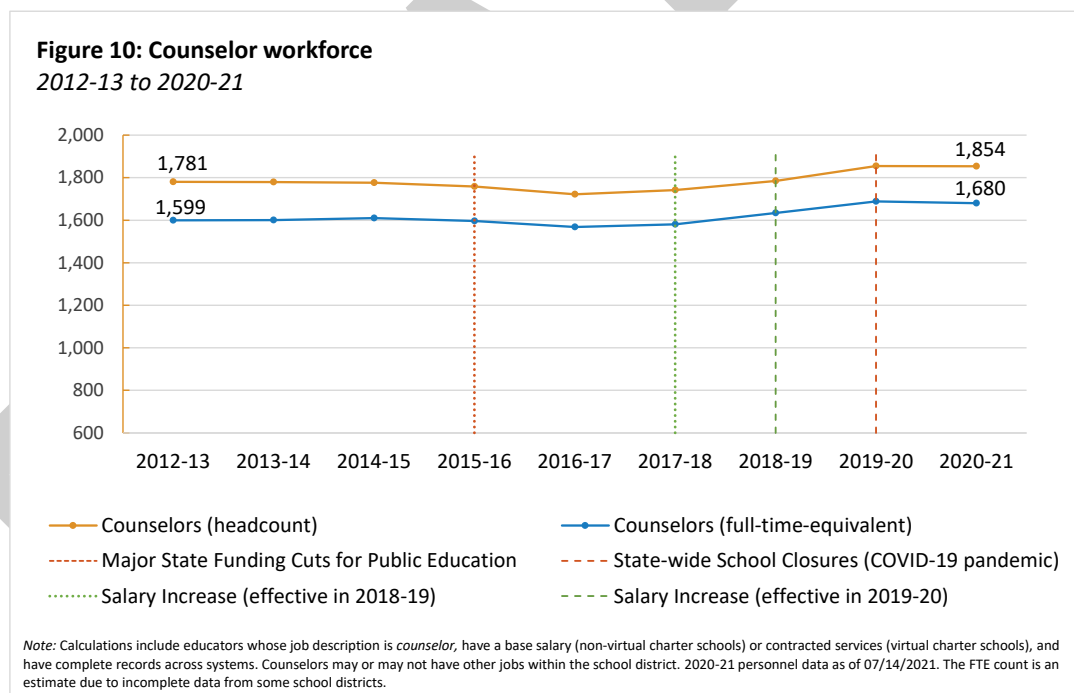
Workforce Trends: Counselors

Counselor Employment

School counselors in Oklahoma are certified educators who provide direct and indirect student services. In the 2020-21 school year, some 1,850 full-and part-time staff worked as counselors in public schools: about 950 elementary school counselors, 1,260 secondary school

counselors, and 50 virtual charter school counselors¹²(Figure 10). Among schools with at least one full- or part-time counselor in 2020-21, the average counselor FTE was 1.0, ranging from 0.83 FTE in elementary schools to 1.36 FTE in high schools.

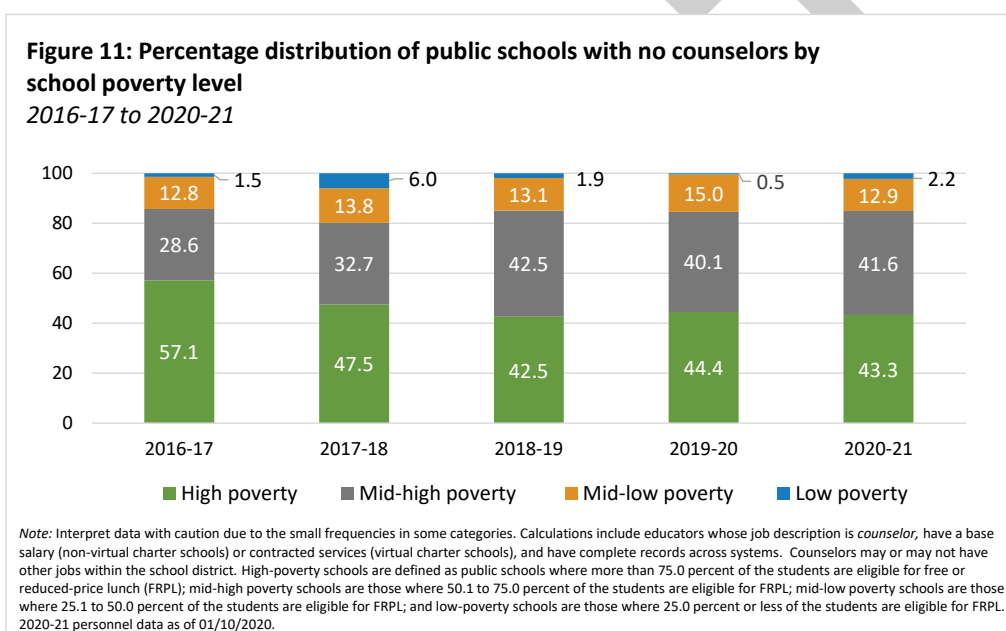
Most major trends observed on all certified staff and teachers between 2012-13 and 2020-21 are also true for school counselors, i.e., a decline in the size of the counselor workforce likely due to the major state funding cuts for public education in 2016-17 and the workforce growth deceleration due to the COVID-19 pandemic. What is different about school counselors' data trends is that before the pay increases in the last decade, there was a slight, but persistent drop in the number of counselors working for the public school system. Since 2016-17, however, both the unduplicated headcount of counselors and the number of full-time-equivalent counselors have been growing for three of the last four years, accounting for a 4 and 5 percent growth since 2012-13, respectively.



About one in every ten public schools in Oklahoma do not have school counselors, and the rate has remained largely intact over the last few years. Ten percent of public schools in 2020-21 (not shown in figures) did not have access to any school counselor, only 1 percent lower than the more than 200 schools with no counselor in 2016-17.

¹² The numbers do not add up to 100 percent because some educators teach on multiple schools and/or school levels.

The extent to which schools with no counselors are mostly high poverty schools has changed over time (Figure 11). In 2020-21, close to 180 public elementary and secondary schools did not have a counselor among their staff. Of these schools, 43 percent were high poverty, 42 percent were mid-high poverty, and the remaining 15 percent were either mid-low or low poverty. Between 2016-17 and 2020-21, the percentage of high poverty schools with no counselors decreased by 14 percent while the percentage of mid-high poverty schools without a counselor increased by 13 percent, leaving the rate of schools with the highest poverty concentrations mostly unchanged.

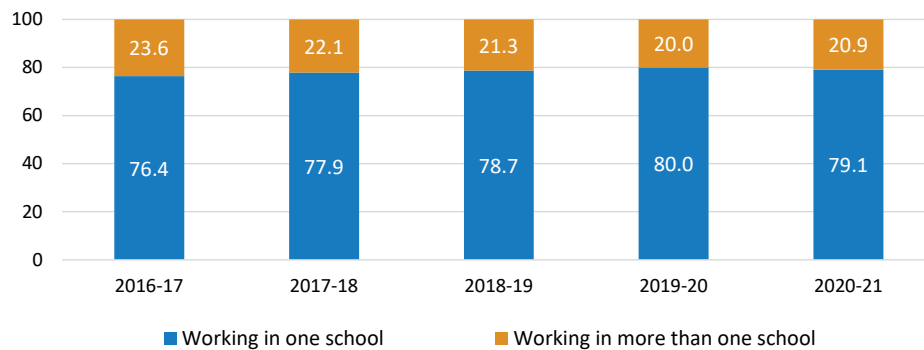


Job Diversification of Counselors

School counselors split their time between multiple schools at a higher rate than all certified staff. In 2020-21, about 21 percent of counselors were working in more than one school (Figure 12), compared with 16 percent of all certified staff in public schools (see Figure 2). The five-percentage point gap in favor of counselors has shrunk and is narrowing fast since 2016-17, when the gap was 10 percentage points.

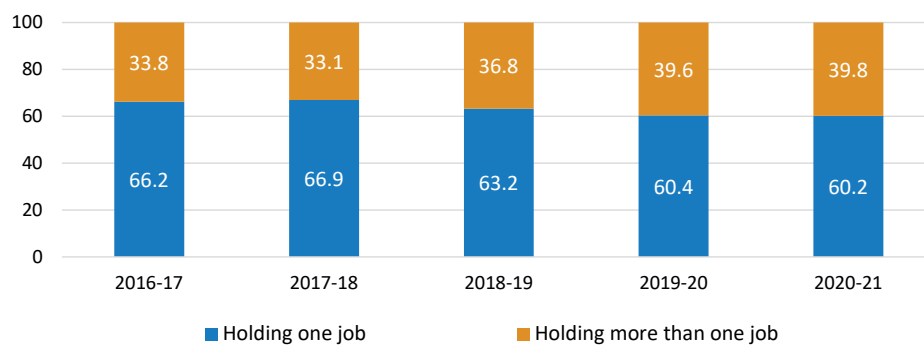
While the diversification of roles for all certified staff who work in multiple schools is less likely today than in the past (see Figure 3), the estimated percentage of counselors working across two or more schools, and holding more than one job, has almost consistently increased since 2016-17 from 34 to 40 percent (Figure 13). The most common combination of jobs held by school counselors in 2020-21 was counselor and teacher, i.e., three in five counselors were also classroom teachers.

Figure 12: Percentage distribution of public schools' counselors by number of schools they work with
2016-17 to 2020-21



Note: Calculations include educators whose job description is *counselor* and have a base salary, and have complete records across systems. 2020-21 personnel data as of 01/10/2020.

Figure 13: Percentage distribution of public schools' counselors working in more than one school by number of jobs
2016-17 to 2020-21

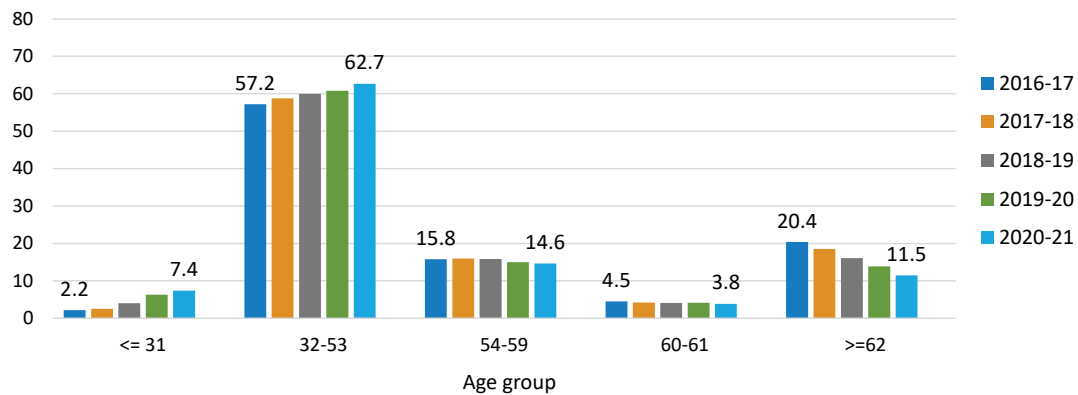


Note: Calculations include educators whose job description is *counselor* and have a base salary, and have complete records across systems. 2020-21 personnel data as of 01/10/2020.

Counselors' Age Composition

Over the past five years, the average age of public-school counselors followed a similar pattern as that of teachers. For counselors, the average age decreased from 51 years old in 2016-17 to 48 years old in 2020-21 (Figure 14). While similar patterns across most age groups are also evident for both teachers and counselors, there is one noticeable difference in the age distribution of counselors: unlike the small decrease observed in the participation rate of teachers ages 32 to 53, the rate of counselors in the same age group increased from 57 percent in 2016-17 to 63 percent in 2020-21. A combination of many factors may have contributed to these trends, including increasing student enrollments and an expansion in non-teaching positions in response to policy and demographic changes in recent years (Felder, 2016a).

Figure 14
Counselor age group percentage distribution
 2016-17 to 2020-21



Note: Calculations include educators whose job description is *counselor*, have a base salary (non-virtual charter schools) or contracted services (virtual charter schools), and have complete records across systems. Counselors may or may not have other jobs within the school district, and the analysis include both full-time and part-time counselors. The educator's age is calculated as of October 1st of each school year, and the educator's years of experience include out-of-state and military experience, each capped at 5 years according to current regulations. . 2020-21 personnel data as of 04/22/2021.

Race and Ethnicity of Counselors and Students

In contrast to the racial and ethnic distribution of the students they are hired to counsel, the school counseling workforce in Oklahoma is primarily White. The racial composition of counselors in the last school year consisted of 84 percent White Americans, 6 percent Blacks or African Americans, 5 percent American Indians or Alaskan Natives, 1 percent Hispanics, and 3 percent who reported being multi-ethnic/racial.

From 2016-17 to 2020-21, the percentage of school counselors of color increased from 13 to 16 percent (not shown in figures); however, some racial/ethnic gaps have worsened over time (Table 3). While the student-counselor gap for Black or African Americans and American Indians or Alaskan Natives narrowed from 4 and 9 points in 2016-17 to 2 and 7 points in 2020-21, the racial and ethnic gap between students and counselors for Hispanics deteriorated from 16 to 18 points during the same period. The gap for the remaining categories has remained roughly constant.

Table 3: Student-to-counselor racial and ethnic gaps**2016-17 & 2020-21***[Percentage points]*

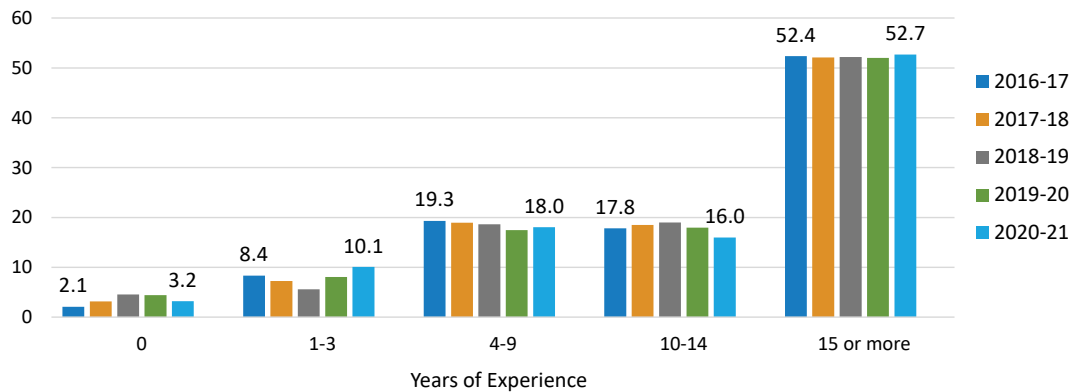
	Hispanic	American Indian/Alaska Native	Asian	Blacks/African American	Pacific Islander	Total Minority
2020-21	-17.5	-6.9	-1.8	-2.1	-0.3	-37.0
2016-17	-16.0	-8.9	-1.5	-4.5	-0.3	-37.4

Note: Enrollment headcount includes prekindergarten, kindergarten and grades 1 thru 12. Racial categories exclude individuals of Hispanic ethnicity. People of Hispanic ethnicity are classified as such regardless of race. Calculations include educators who have a base salary, and have complete records across systems. 2020-21 personnel data as of 01/10/2020.

Experience of Counselors

The distribution of years of experience for school counselors has also remained stable during the last five school years (Figure 15). In 2020-21, about 13 percent of public-school counselors had 3 or fewer years of experience, 18 percent had 4 to 9 years of experience, 16 percent had 10 to 14 years of experience, and 53 percent had 15 or more years of experience. Lower percentages of counselors in 2020-21 than in 2016-17 had 4 to 9 years of experience (18 vs. 19 percent) and 10 to 14 years of experience (16 vs. 18 percent). At the same time, the percentage who had 3 or fewer years of experience and 15 or more years of experience was higher in 2020-21 than in 2016-17 (13 vs. 10 percent, and 53 vs. 52, respectively). The average counselor in 2020-21 had 16 years of experience, 1 year less than in 2016-17. In comparison to teachers, school counselors have on average more years of experience (16 vs. 13 in 2020-21), which can be partly explained by the lower percentage of counselors with no experience (3 vs. 6 percent) and the significant higher percentage of counselors with 15 or more years of experience (53 vs. 37 percent).

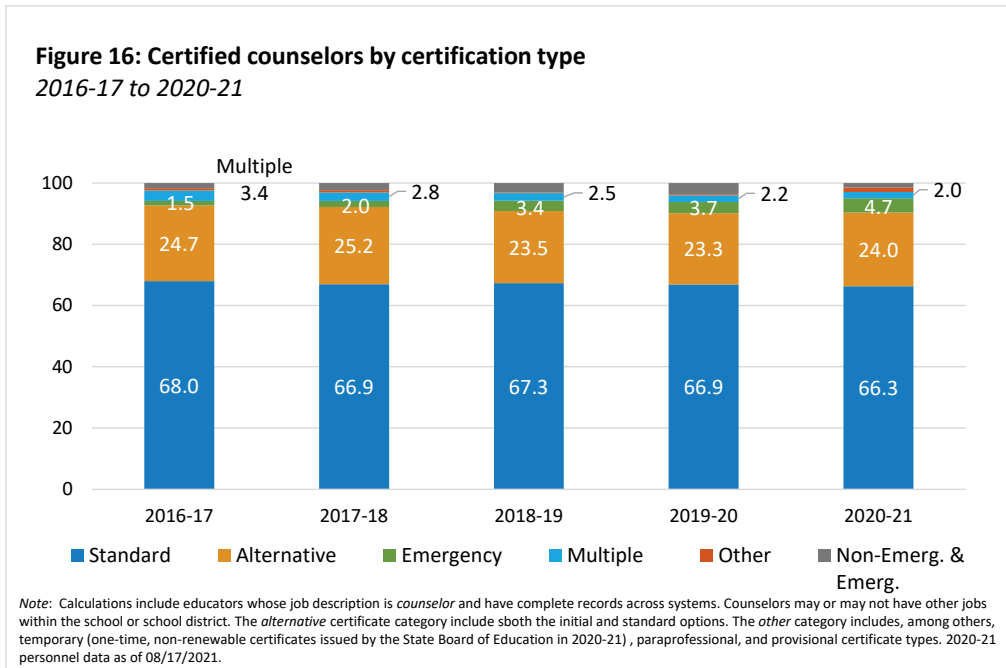
Figure 15
Counselor experience percentage distribution
 2016-17 to 2020-21



Note: Calculations include educators whose job description is *counselor*, have a base salary (non-virtual charter schools) or contracted services (virtual charter schools), and have complete records across systems. Counselors may or may not have other jobs within the school district, and the analysis include both full-time and part-time counselors. The educator's years of experience include out-of-state and military experience, each capped at 5 years according to current regulations. 2020-21 personnel data as of 04/22/2021.

Certification Status of Counselors

Although the distribution of certificate composition for school counselors is typically more dispersed than the distribution for teachers, most counselors (66 percent in 2020-21), as it was the case for teachers, hold a *standard* certificate, followed by about 1 in 4 (24 percent in 2020-21) of them holding an *alternative* certificate (Figure 16). Similar to the trends in teacher certification composition, the percentage of counselors holding a *standard* certificate in 2020-21 (66 percent) was smaller than the percentage in 2016-17 (68 percent). In addition, a larger percentage of counselors were issued an emergency certificate for the counseling role in 2020-21 (5 percent) than in 2016-17 (1 percent). Most of the remaining certificate categories, including *alternative* certification, experienced a slight drop in their participation rates over the same period. As it was the case for teachers, pre-pandemic certificate participation rate trends for counselors continued in 2020-21 in most cases.



Workforce Trends: Principals

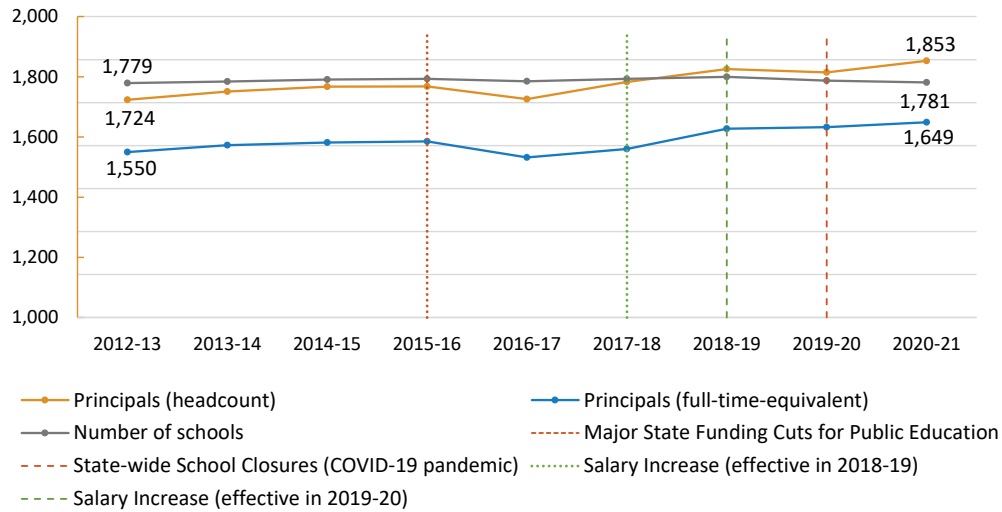
Principal Employment

During the 2020-21 school year, public schools in Oklahoma employed some 1,850 full- and part-time principals (Figure 17), including about 1,038 elementary school principals (average FTE principals 0.94), 813 secondary school principals (avg. FTE 0.88), and 212 virtual charter school principals (avg. FTE 2.51).¹³

Excluding the drop in the number of principals employed by the public school system in school year 2016-17—likely due to the major funding cuts for public education the state faced that year—, and the much smaller and recent drop in 2019-20, the head count of full-time and part-time principals between 2012-13 and 2020-21 shows a positive trend, ending the period with 7 percent more principals than eight years ago, while the number of public schools barely increased from 1,779 to 1,781 (less than a 1 percentage-point increase) over this period. A similar pattern is observed for the number of full-time-equivalent principals, which increased by 6 percentage points since 2012-13.

¹³ The numbers do not add up to 100 percent because some educators teach on multiple schools and/or school levels.

Figure 17: Principal workforce
2012-13 to 2020-21

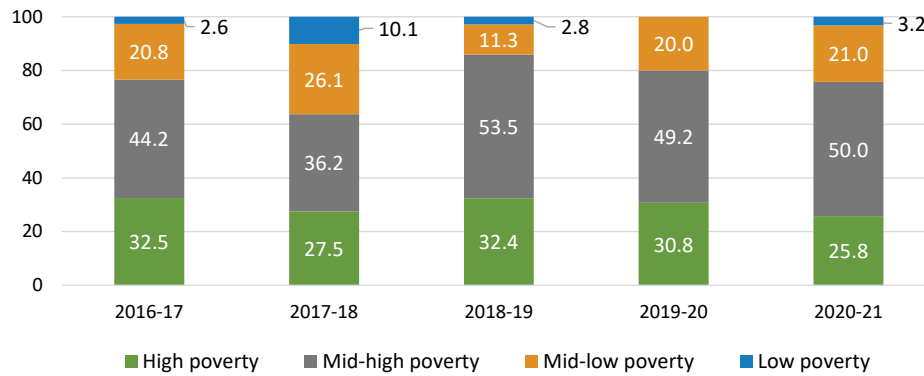


Note: Calculations include educators whose job description is *principal*, have a base salary (non-virtual charter schools) or contracted services (virtual charter schools), and have complete records across systems. Principals may or may not have other jobs within the school district. 2020-21 personnel data as of 07/14/2021. The FTE count is an estimate due to incomplete data from some school districts.

Although the great majority of Oklahoma public schools have a principal, about 3 percent of schools statewide at all levels did not have one in the 2020-21 school year (not shown in figures). While the number of schools without principals has been decreasing in the last few years (77 in 2016-17 vs. 62 in 2020-21), the participation rate of such schools during the same period has remained almost unchanged.

Thirty-two percent of public schools with no principals were high-poverty –i.e., schools where more than 75 percent of the students are eligible for the free or reduced-price lunch (FRPL) program—in 2016-17 (Figure 18). The rate oscillated in the next two years before starting a decline in 2019-20 to a low of 26 percent in 2020-21. From 2016-17 to 2020-21, the rate of schools with no principals that were mid-high poverty increased from 44 to 50 percent, with significant year-over-year variation.

Figure 18: Percentage distribution of public schools with no principals by school poverty level 2016-17 to 2020-21



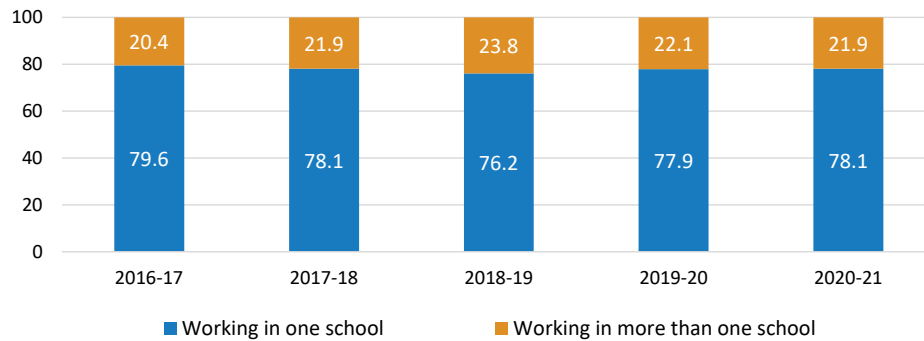
Note: Interpret data with caution due to the small frequencies in some categories. Calculations include educators whose job description is *principal*, have a base salary or contracted services, and have complete records across systems. Counselors may or may not have other jobs within the school district. High-poverty schools are defined as public schools where more than 75.0 percent of the students are eligible for free or reduced-price lunch (FRPL); mid-high poverty schools are those where 50.1 to 75.0 percent of the students are eligible for FRPL; mid-low poverty schools are those where 25.1 to 50.0 percent of the students are eligible for FRPL; and low-poverty schools are those where 25.0 percent or less of the students are eligible for FRPL. 2020-21 personnel data as of 01/10/2020.

Job Diversification of Principals

While working in only one school is still the most common work arrangement for principals, they are, unlike counselors, relatively more likely to work in more than one school today than four years ago (Figure 19). Among all principals in 2020-21, about 400 were splitting their time between multiple schools, typically two within the same school district.

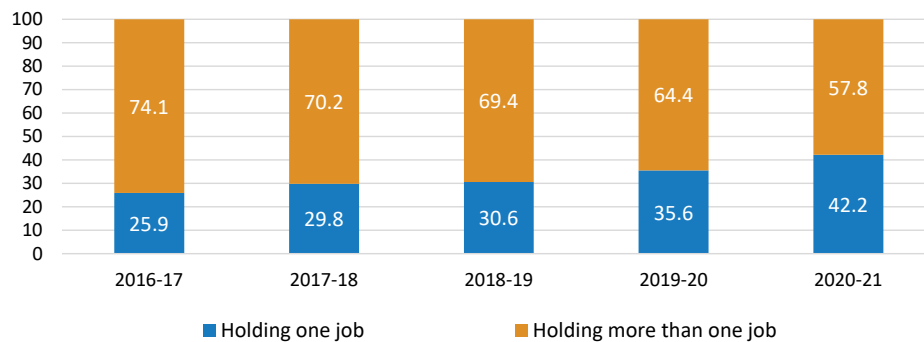
In 2020-21, there were no significant differences between principals and counselors in the proportion of educators working in one school. At the same time, the proportion of principals employed by more than one public school and holding more than 1 job (58 percent, Figure 20) was 18 percentage points higher than the percentage of counselors employed by more than one public school and holding more than 1 job (40 percent; see Figure 11). However, the gap is rapidly closing, given in large part to the accelerated increase in the percentage of principals working in more than school but holding the same job.

Figure 19: Percentage distribution of public schools' principals by number of schools they work with
2016-17 to 2020-21



Note: Calculations include educators whose job description is *principal* and have a base salary. 2020-21 personnel data as of 01/10/2020.

Figure 20: Percentage distribution of public schools' principals working in more than one school by number of jobs held
2016-17 to 2020-21

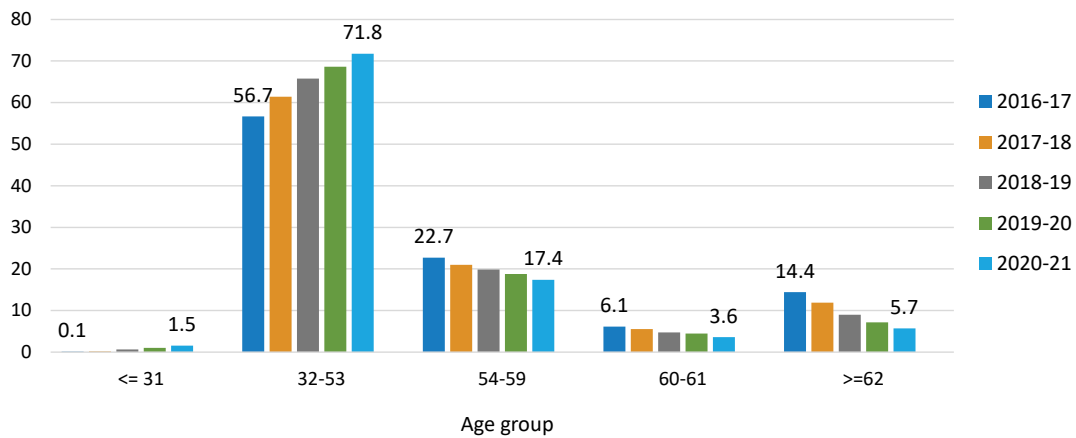


Note: Calculations include educators whose job description is *principal* and have a base salary. 2020-21 personnel data as of 01/10/2020.

Principals' Age Composition

Similar to the trends observed for counselors, and to certain degree for teachers, the age distribution of public-school principals is rapidly changing (Figure 21). In 2016-17, the average age of principals in Oklahoma was 52, 4 years older than in the most recent school year (2020-21). When examining frequencies by age category, apparent changes in composition help to explain this trend. While the participation rate of principals in the two younger age groups increased by 1 (age 31 and younger) and 15 (age 32-53) percentage points, respectively, the share of the remaining categories steadily dropped by 5 (age 54-59), 2 (age 60-61), and 9 (age 62 and older) percentage points, respectively.

Figure 21: Principal age group percentage distribution
2016-17 to 2020-21



Note: Calculations include educators whose job description is *principal*, have a base salary (non-virtual charter schools) or contracted services (virtual charter schools), and have complete records across systems. Principals may or may not have other jobs within the school district, and the analysis include both full-time and part-time principals. The educator's age is calculated as of October 1st of each school year, and the educator's years of experience include out-of-state and military experience, each capped at 5 years according to current regulations. 2020-21 personnel data as of 04/22/2021.

Race and Ethnicity of Principals and Students

Diversity among school principals is critical for many reasons, including enhancing the academic opportunities for students of color (Grissom, Rodriguez, & Kern, 2017); increasing acceptance and trust across racial and ethnic groups (Hughes, Warren, Steward, Tomaskovic-Devey, & Mears, 2017); and improving the working environment of educators of color (Grissom & Keiser, 2011), which in turn can contribute to both recruitment and retention of a more diverse educator workforce.

The mismatch between the racial and ethnic profiles of principal and the students they lead in 2020-21 was slightly larger than four years ago (Table 4). While the percentage of school principals who were White slightly decreased during this period from 86 to 85 percent (not shown in the table), there was an increase in the percentage of the student population who were students of color, from 51 to 53 percent—which more than compensated for the drop in the workforce participation of White principals—, leading to an overall widening of the minority gap during this period. The share of minority principals in 2020-21 was very similar to the share of minority teachers (14.5 vs. 15.2).

Table 4: Student-to-principal racial and ethnic gaps

2016-17 & 2020-21

[Percentage points]

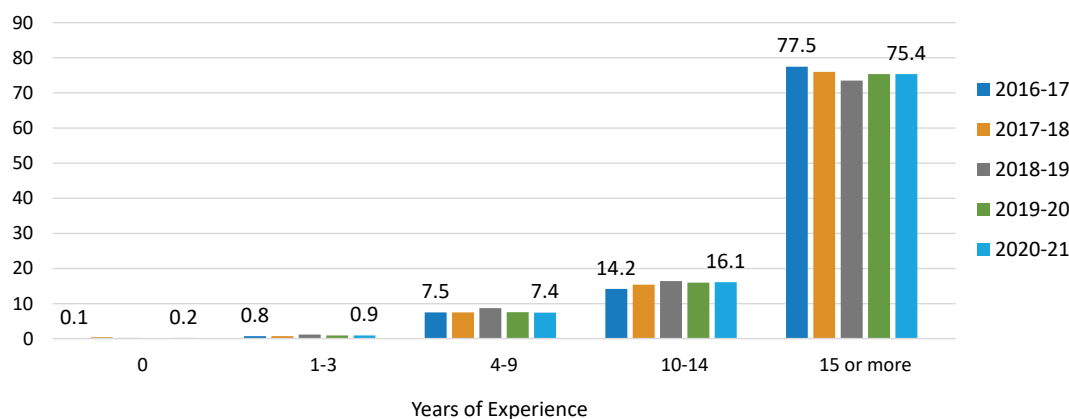
	Hispanic	American Indian/Alaska Native	Asian	Blacks/African American	Pacific Islander	Total Minority
2020-21	-16.2	-6.2	-1.5	-4.1	-0.2	-37.6
2016-17	-14.9	-8.2	-1.5	-5.3	-0.2	-36.8

Note: Enrollment headcount includes prekindergarten, kindergarten and grades 1 thru 12. Racial categories exclude individuals of Hispanic ethnicity. People of Hispanic ethnicity are classified as such regardless of race. Calculations include educators who have a base salary, and have complete records across systems. 2020-21 personnel data as of 01/10/2020.

Experience of Principals

Between 2016-17 and 2020-21, public school principals had an average of 21 years of experience, which includes all experience as educators in the public school system. In both school years, most principals (91 percent) had 10 or more years of experience and very few of them (less than 1 percent) had 3 or fewer years of experience (Figure 22). Much of this can be explained by the administrator certification requirements in relation to previous years of experience and the higher rates of retention for principals than for teachers and counselors (58 vs. 56 vs. 45 percent average retention rate after 4 years, respectively) discussed in the subsection *Retention* of the *Demand* section.

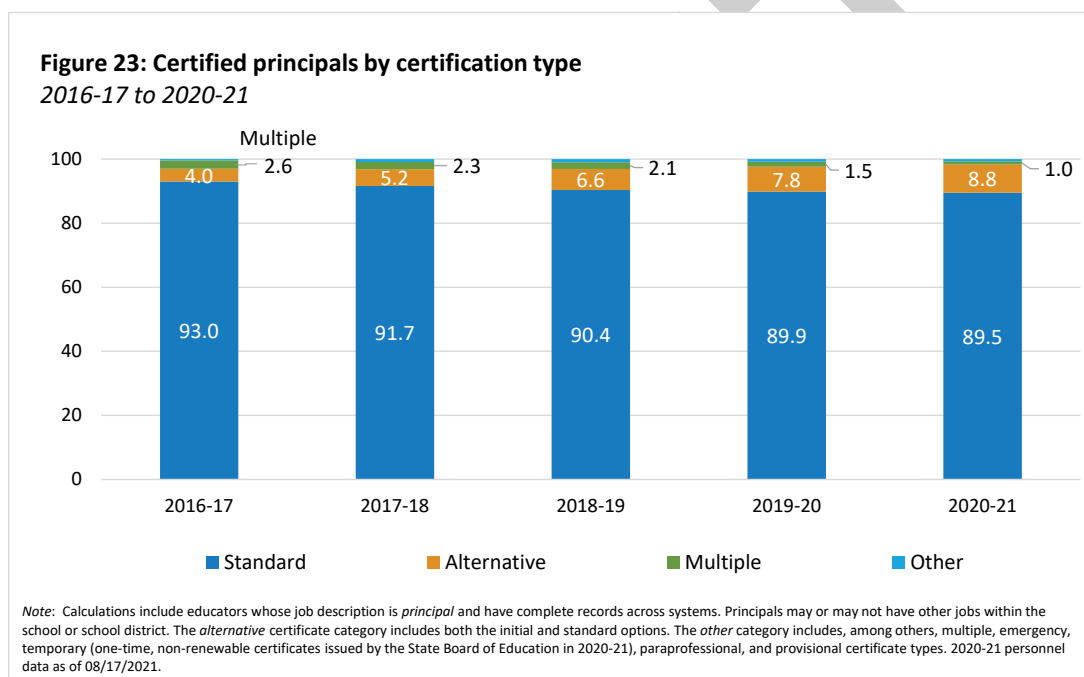
Figure 22: Principal experience percentage distribution
2016-17 to 2020-21



Note: Calculations include educators whose job description is *principal*, have a base salary (non-virtual charter schools) or contracted services (virtual charter schools), and have complete records across systems. Principals may or may not have other jobs within the school district, and the analysis include both full-time and part-time principals. The educator's age is calculated as of October 1st of each school year, and the educator's years of experience include out-of-state and military experience, each capped at 5 years according to current regulations. 2020-21 personnel data as of 04/22/2021.

Certification Status of Principals

Despite the steady decline in the share of principals with a *standard* certificate in total population for at least the previous five years, and just like the distributions and trends observed for teachers and counselors, principals with such certification in 2020-21 made up most of the principal workforce (90 percent) (Figure 23). Data show that most of the drop in the *standard* certification participation rate since at least 2016-17 has been counterbalanced by a persistent increase in the percentage of principals holding an *alternative* certification. During the COVID-19 pandemic, there were no changes compared to the previous trends.



Supply Factors

Every year, most of the educators' supply comes from individuals staying in public school teaching from the year before. Continuing educators (i.e., stayers) typically remain in the same position working for the same district. However, some change (voluntarily or involuntarily) position and/or school district. Although their transfer within the system creates openings, since they remain working as public educators, they are considered part of the teaching force in this section of the report. Refer to *Section: Turnover* for a detailed analysis of educator turnover, including leavers and movers, and the trends in recent years, and to *Section: Retention* for separate analyses about educators who remained in the same school after certain number of years and

educators who were still working for the public school system, regardless of whether it was in one of their initial schools of assignment or not.

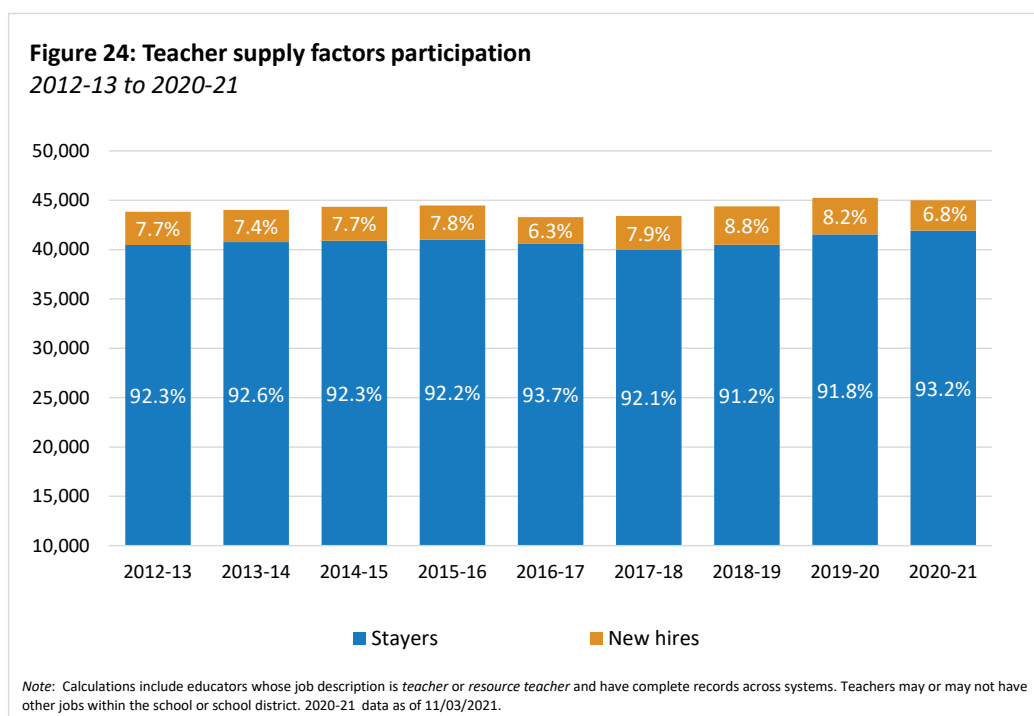
New hires are defined slightly differently in this report depending on the educator role. New teacher hires are those educators who have no previous teaching experience. New counselor or principal hires are defined as those educators who have not served in that role in the previous five years.

Regardless of role, however, new hires come from several sources, including recent graduates from education preparation programs, former graduates with or without work experience, those returning to the public school system after some time, those shifting/adding roles, and career changers with non-teaching degrees. Only some of these data (i.e., internal to the OSDE) were readily available during the preparation of this report, making most of the information necessary to make a more complete assessment of all sources of supply inaccessible. However, key characteristics of this population, regardless of the source, are described below for teachers, school counselors and principals. It is important to note that due to the unique circumstances of the 2020-21 academic year, data for 2019-20 are presented for some analyses instead for measuring change over time. A brief mention to data in 2020-21, however, is regularly offered.

Teacher Stayers & New Hires

Figure 24 shows the composition of the educator supply between 2012-13 and 2020-21, highlighting three main points. First, the proportion of new hires remained unchanged at about 7.7 percent between 2012-13 and 2015-16, and then dropped to 6.3 percent in 2016-17, the year in which major state funding cuts for public education occurred. Second, an upward trend started around 2017-18, increasing the participation of the new hires group on the overall supply to 8.2 percent in 2019-20. Third, impacted by the COVID-19 pandemic, the number and proportion of public-school teacher stayers reached a second peak at 93.2 percent in 2020-21, leaving the participation of new teachers at a historical second lowest level since 2012-13 (6.8 percent). There are at least two variables that could help explain the recent changes in teacher supply composition (Center for Educator Recruitment, Retention, and Advancement, 2020). On one hand, the rapid growth in the participation rate of stayers in Oklahoma public schools in 2020-21 (1.4 percentage points vs. an average of -0.1 percentage points during the previous eight years) may have prompted a decrease in the number of new hires needed to fill the vacancies created by those

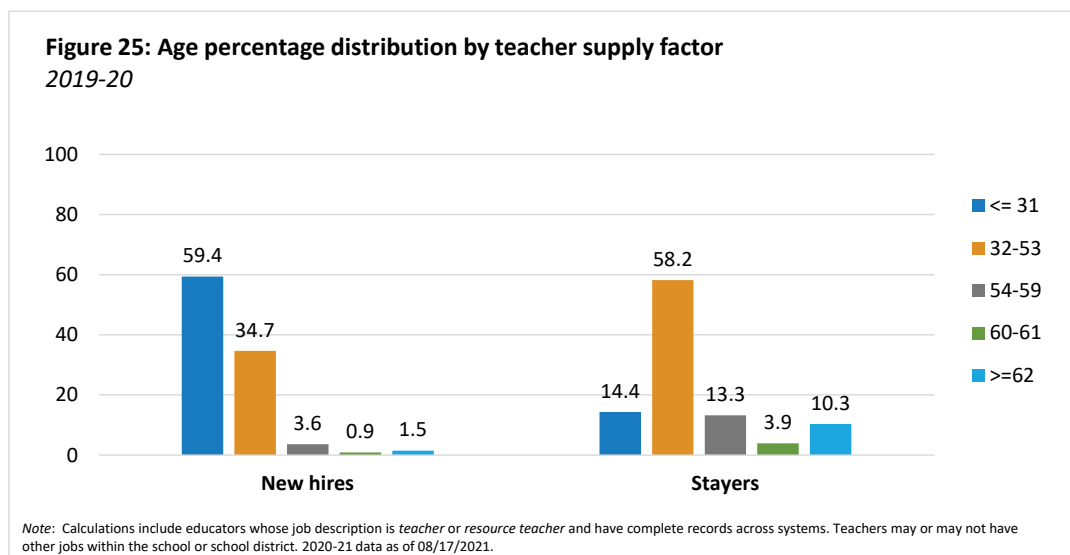
departures. On the other hand, schools and districts may have faced tougher challenges when attempting to fill positions in 2020-21 due to heightened health and safety concerns. Further research is warranted to unravel the issue.



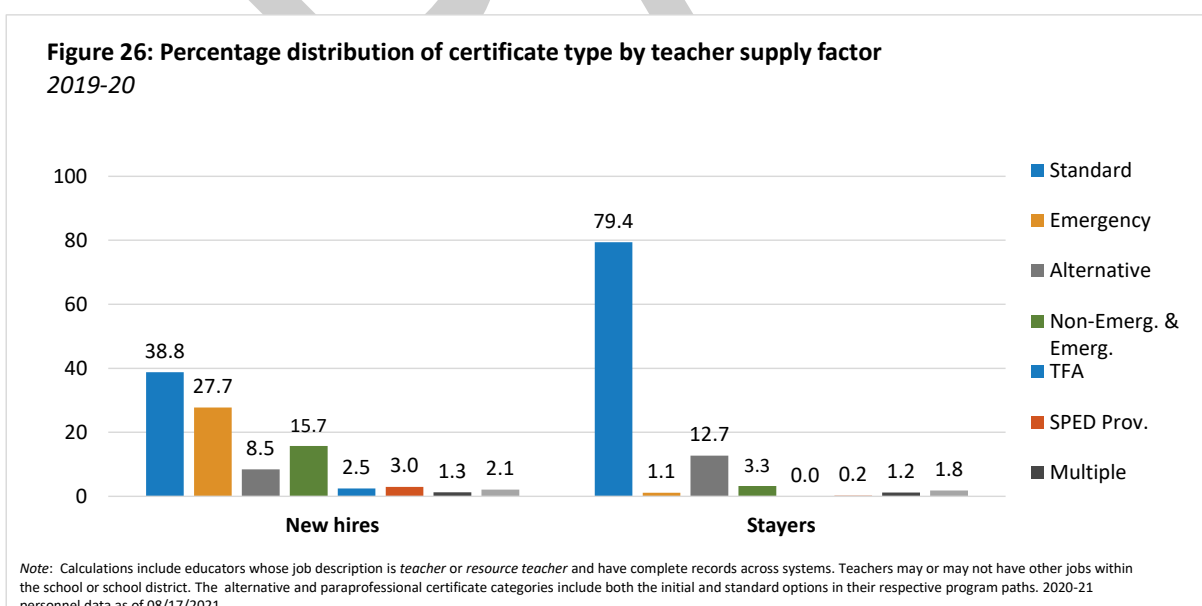
New hires and stayers are different in many aspects and any meaningful differences among them across key characteristics will offer a relevant glimpse into the future composition of the workforce. The five-year trend comparisons conducted in this section use data from school years 2015-16 and 2019-20. The reasons for these distinctions are twofold: (1) the distribution of these factors during a highly atypical school year such as 2020-21 will most likely not be strictly comparable to previous years, and (2) the relatively high proportion of incomplete information across data systems for new hires in 2020-21—including demographic characteristics—who are exempt from certain certification or data reporting requirements.

A study of past data showed there was a significant difference in the age and certificate type distribution of new hires and stayers (Lazarte-Alcalá, 2018); recent data confirm that (Figure 25). In 2019-20, the percentage of new hires who were 31 and younger (59 percent) was more than four times larger than that of stayers in the same age group (14 percent). The percentage of other age categories was lower for the new hires group, but most notably for teachers in the 32 to 53 age category (35 vs. 58 percent, respectively). The number of new teacher hires who were in the 31 and under age category in 2019-20 was 10 percent higher than five years earlier (not shown in the

figures), a suggestive sign of the “greening” trend in the teaching force occurring nationally (Ingersol, Merrill, & Collins, 2018).

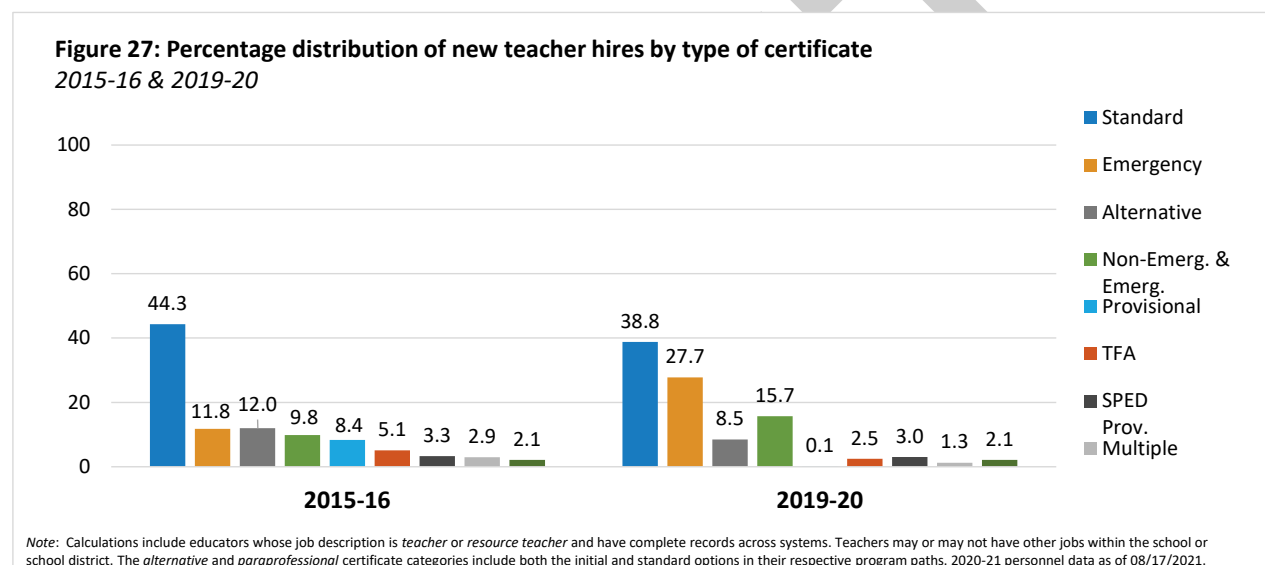


Evidence shows there is more frequent occurrence of certificate types *emergency* and *non-emergency & emergency* combined, and less so of *standard* and *alternative*, for new hires than for stayers in the state’s public school system (Figure 26). Most notably, the participation rate of teachers with a *standard* certificate in 2019-20 was 40 percentage points lower among new hires (79 vs. 39 percent), while the participation rate of educators with an *emergency* certificate was 27 percentage points higher among new hires (1 vs. 28 percent) during the same year.



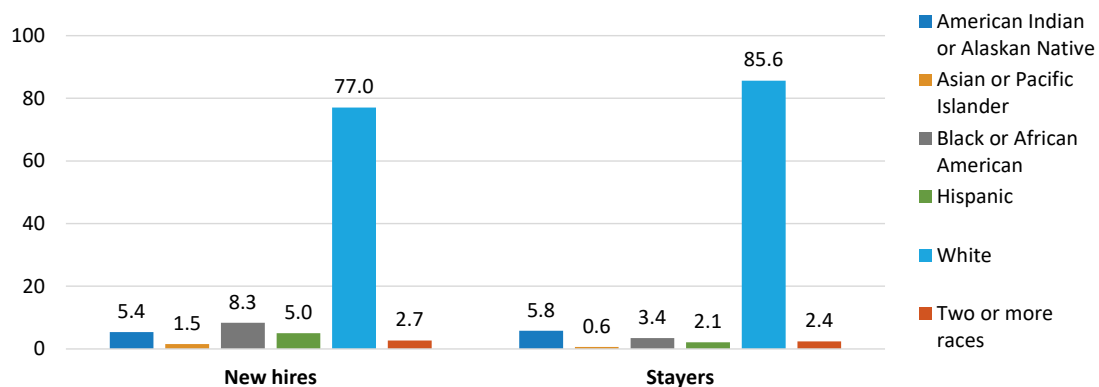
The contrasting differences observed in the certificate distribution between new hires and stayers can be largely explained by changes in new hires’ certificate type trends. For instance, the

participation rate of most certificate types dropped during the last 5 years, except for the *emergency* and *non-emergency* and *emergency* combined categories (Figure 27). The percentage of new educators with an *emergency* certificate was found to be significantly higher in 2019-20 than in 2015-16—a 16 percentage point increase. Other notable changes during this time period include a 5 and 4 percentage drop in the number of new teacher hires holding a *standard* or an *alternative* certificate, respectively. Please note that some of the circumstances under which a *provisional* certificate is issued have changed in the last few years, making the comparison across years for this category not entirely meaningful.



As previously discussed in *Subsection: Race and Ethnicity of Teachers and Students*, the public-school teaching workforce in the state is slightly becoming more diverse. Most public school elementary and secondary teachers, both new hires and stayers, were White in 2019-20 (Figure 28). However, the percentage of minority teachers in the same year was higher for new hires than for stayers (23 vs. 14 percent), with the largest difference observed for the Black or African American population: 8 vs. 3 percent. Similar trends were found between 2015-16 and 2019-20 for new hires minority teachers (not shown in the figures). For example, the Latino or Hispanic population share grew during this period by two percentage points while the rest of minority categories showed a one percentage point increase. At the same time, the estimated share of the White teaching population dropped 5 percentage points during the same five-year period (82 vs. 77 percent).

**Figure 28: Race & ethnic percentage distribution by teacher supply factor
2019-20**

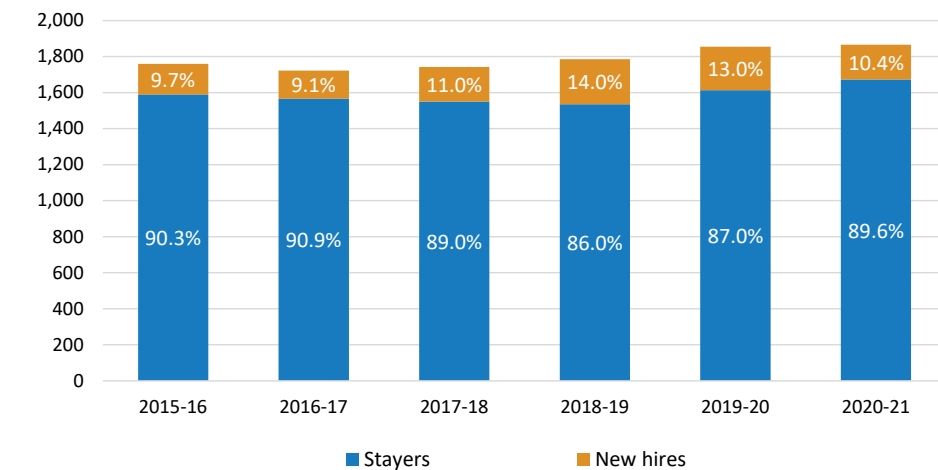


Note: Calculations include educators whose job description is teacher or resource teacher and have complete records across systems. Teachers may or may not have other jobs within the school. 2020-21 data as of 08/17/2021.

Counselor Stayers & New Hires

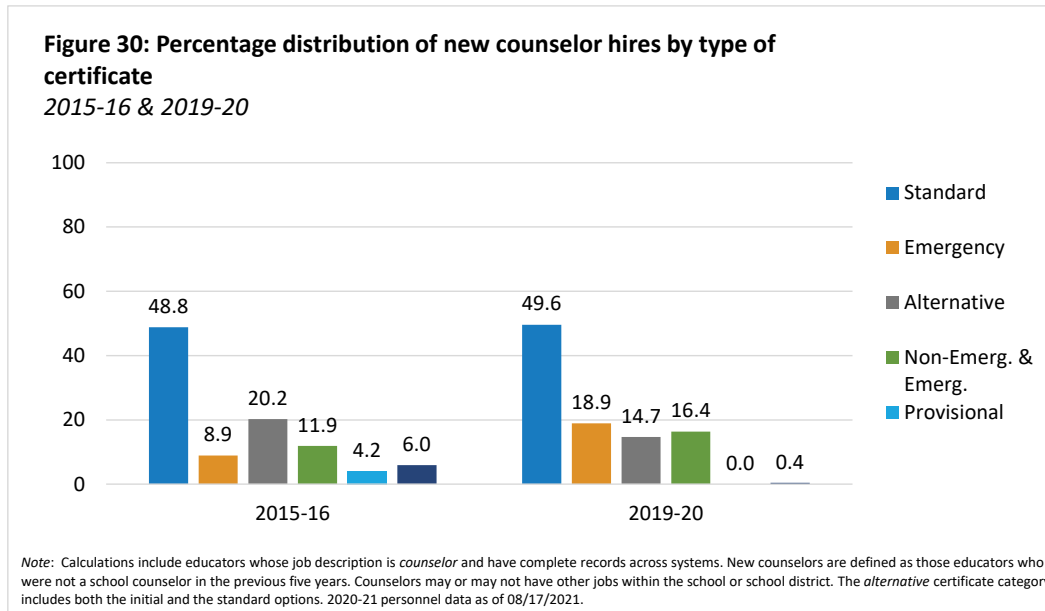
The medium-term trend counselor supply factor composition does not substantially differ from that of the teacher workforce (Figure 29). The same upward movement in the participation of the new teacher hires group on the overall supply from 2016-17 to 2019-20 was also observed for new counselors, reaching a new second highest over the period of analysis, of 13 percent in 2019-20, after slightly dropping 1 percent from the previous year. Another similarity between counselors and teachers is the composition of the workforce in 2020-21. The participation rate of counselor stayers also continued to increase but remained close to the period average (88.6 percent).

Figure 29: Counselor supply factors participation
2012-13 to 2020-21



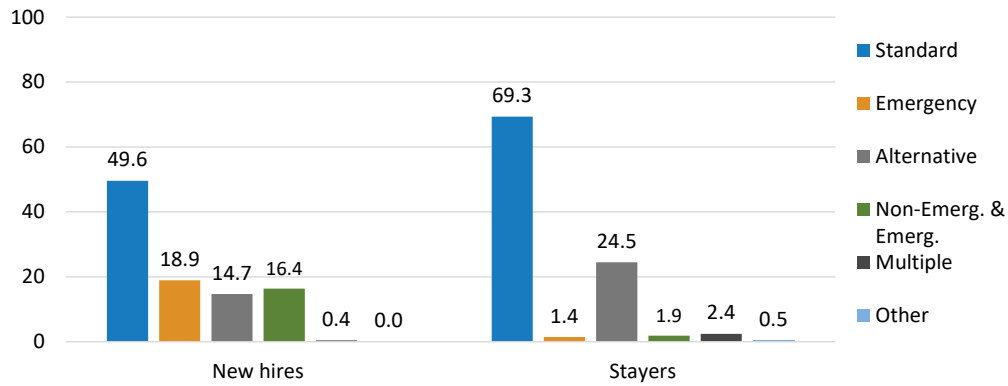
Note: Calculations include educators whose job description is *counselor* and have complete records across systems. New counselors are defined as those educators who were not a school principal in the previous five years. Counselors may or may not have other jobs within the school or school district. 2020-21 data as of 08/17/2021.

In both 2015-16 and 2019-20, about the same proportion of new counselors held a *standard* certificate (49 vs. 50 percent; Figure 30), which contrast with the evidence of a reduced participation of such category among new teachers during the same time period (see Figure 27). The percentage distribution of the remaining certificate categories for new counselors between 2015-16 and 2019-20 follow very similar trends as those of new teachers, especially in terms of the sharp increase in the proportion of new counselor hires with an *emergency* certificate (9 vs. 19 percent, respectively). As explained before, 2019-20 rather 2020-21 data are used for most of the supply factor analyses of trends. However, a preliminary comparison of the percentage distribution of certificates among new counselor hires reveals that the largest sources of discrepancy between 2019-20 and 2020-21 (not shown in figures) is the higher percentage of beginning counselors holding an *emergency* certificate in 2020-21 (24 vs. 19 percent) and a lower share of them holding both *non-emergency & emergency* certificates combined (7 vs. 16 percent).



The results of the certificate distribution comparison analysis between new counselor hires and stayers in 2019-20 (Figure 31), confirms the marked differences found for teachers between the two supply factors. For example, beginning counselors more frequently hold an *emergency* (19 vs. 1 percent) or *non-emergency & emergency* certificates combined (16 vs. 2 percent) than stayers. On the contrary, the participation rate of stayers holding a *standard* (69 vs. 50 percent) or an *alternative* (24 vs. 15 percent) certification is higher than that of new counselors. Some of the key shifts in the certificate distribution between new and stayer counselors may be explained by the many *emergency* certified educators who go on to become fully certified with a non-emergency certification even before the *emergency* certificate's validity period expires. Refer to *Section: Retention* for a detailed analysis of counselor retention rates by certificate type. Please note that the *other* category in Figure 31 lists *temporary* (one-time, non-renewable) certificates issued by the State Board of Education during the 2020-21 school year to applicants who had otherwise applied and met requirements for certification but were unable to complete competency exam(s) or required clock/credit hours due to the COVID-19 pandemic (Oklahoma State Department of Education, n.d.).

Figure 31: Percentage distribution of certificate type by counselor supply factor
2019-20

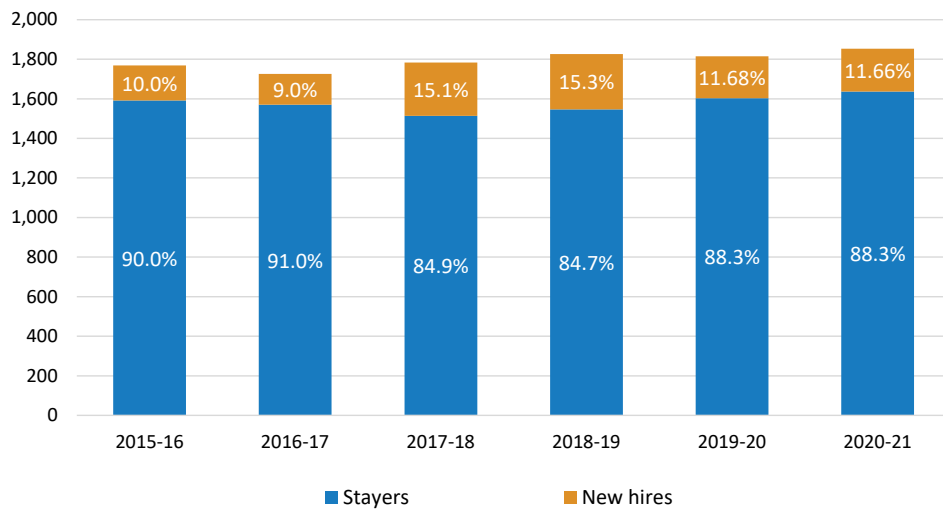


Note: Calculations include educators whose job description is *counselor* and have complete records across systems. New counselors are defined as those educators who were not a school counselor in the previous five years. Counselors may or may not have other jobs within the school or school district. The *alternative* certificate category includes both the initial and the standard options. The *other* category includes temporary (one-time, non-renewable) certificates issued by the State Board of Education during the 2020-21 school year. 2020-21 personnel data as of 08/17/2021.

Principal Stayers & New Hires

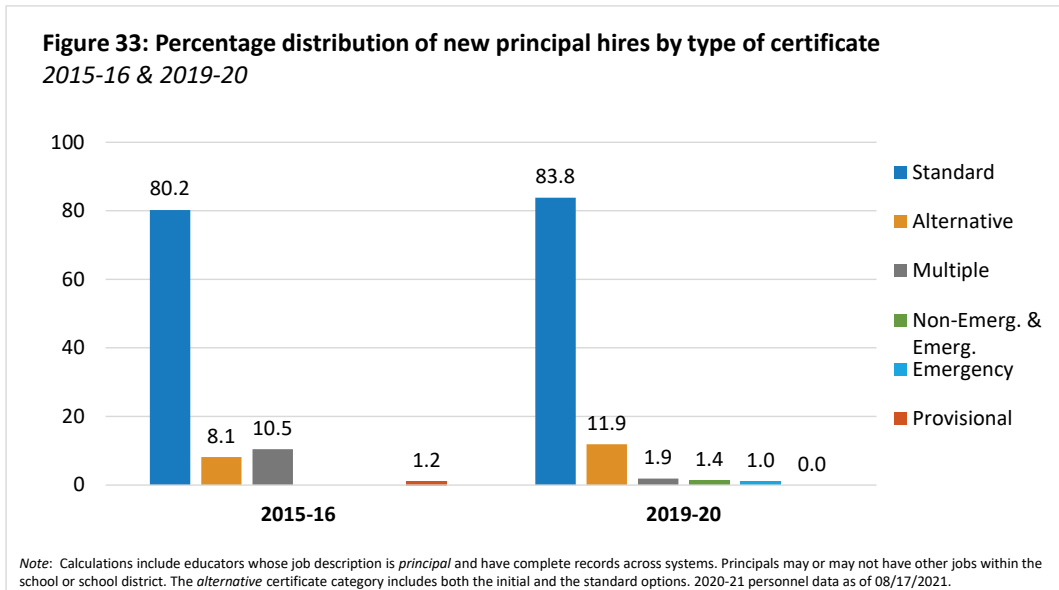
Recent trends in the composition of principal supply by factor were substantially similar to those of teachers and counselors, at least until 2019-20. A general increase existed in the percentage of new principal hires from 10.0 percent in 2015-16 to 11.7 percent in 2020-21, despite setbacks in 2016-17 and 2019-20 (Figure 32). However, contrary to the decrease observed in the participation rate of new hires in 2020-21 for both teachers and counselors, the percentage of beginning principals remained the same at an estimated 11.7 percent during the same year. Note that no measurable differences were found between 2019-20 and 2020-21 when the distribution of new principal hires, by type of certification, was compared (not shown in figures). For example, the largest difference observed (1.4 percentage points) was for the *other* category in 2020-21, which includes one principal with a paraprofessional certificate and two other principals with a temporary certificate.

Figure 32: Principal supply factors participation
2012-13 to 2020-21

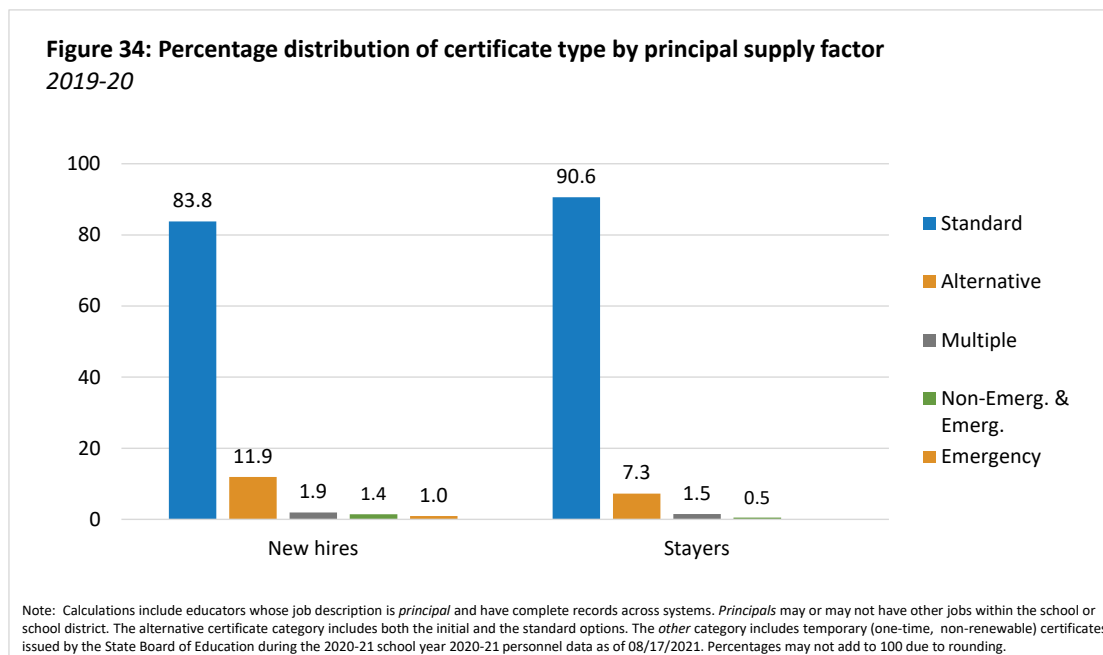


Note: Calculations include educators whose job description is *principal* and have complete records across systems. New principals are defined as those educators who were not a school principal in the previous five years. Principals may or may not have other jobs within the school or school district. 2020-21 data as of 08/17/2021.

Overall, certificate distribution patterns for new principal hires exhibited different trends compared to those seen for teachers and counselors between 2015-16 and 2019-20. For example, in 2019-20, new principals holding a *standard* certification and new principals holding an *alternative* certification made up 84 and 12 percent of all new hires, respectively –in both cases four percentage points higher than in 2015-16 (Figure 33). We have previously showed that the participation rate for both type of certifications in 2019-20 stayed about the same or were lower than the rates in 2015-16 for both teachers and counselors. The only common trend shared by all three groups of educators is the drop in the participation rate of the *multiple* certificates category (2 vs. 10 percent for new principals in 2019-20 and 2015-16, respectively).



The contrasting certificate distribution rates observed between principals and teachers and principals and school counselors in 2019-20 are also true for the distribution of certificate categories by supply factor (Figure 34). Although the share of stayers holding a *standard* certificate is larger than the share of new hires holding such certificate for all three educator roles, the size of the share differences varies substantially among them, i.e., from 40 and 19 percentage points for teachers and counselors, to 7 percentage points for principals. Another dissimilarity among the three subgroups of educators is the difference in the participation rate of new principals and stayers holding an *alternative* certificate, which is frequently the certificate category with the second highest share of the principals' supply. In 2019-20, the percentage of new principals holding an *alternative* certificate (12 percent) was larger than the percentage of principal stayers holding an *alternative* certificate (7 percent), while the percentage of new teachers and counselors teaching through an *alternative* certification (8 and 15 percent, respectively) was smaller than that of stayers teaching through an *alternative* certification (13 and 24 percent, respectively). Refer to figure 26 (page 29) and figure 31 (page 34) on this report for the teachers' and counselor's certificate distribution.



Educator Preparation Programs

As we have seen, *new hires* is one of the large groups composing the teaching workforce. A fundamental source of educators for this group are recent graduates of educator preparation programs, or graduates from prior years, some of whom could have some teaching experience. The changes we have seen in the demand for teachers in recent years can have a significant effect on education preparation programs enrollment, completion rates, and the proportion of college graduates entering the teaching profession. In this section, data from the Oklahoma State Regents of Higher Education (OSRHE) are used to explore trends in the number of graduates with an education degree and their distribution among Institutions of Higher Education (IHEs), major fields, and academic degree from 2012-13 through 2020-21. Data for graduates from school counseling and educational administration and supervision programs are presented in separate figures.

Between 2012-13 and 2017-18, fewer college graduates earned an education degree for a total decline of more than one-fifth, i.e., 2,994 vs. 2,368 (Figure 35). The downward trend for completers of teacher preparation programs in Oklahoma until 2017-18 closely resembles the long decline in the national number of students completing such programs, which in turn reflected an even more drastic drop in the number of students enrolling in preparation programs during the 2010s (Partelow, 2019). The drop in Oklahoma's teacher preparation program completers means that across the state, approximately 626 fewer students graduated in the 2017-18 academic year

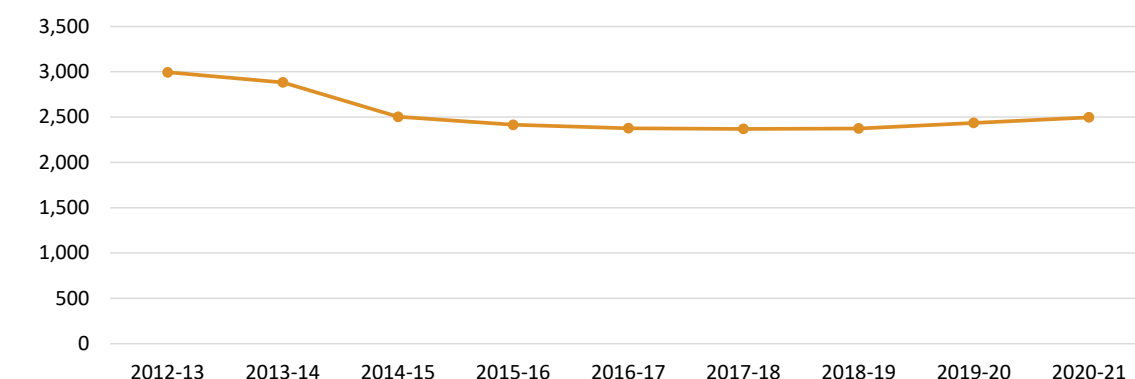
compared to the number of students who graduated in 2012-13. Three in every four graduating institutions show a pattern of decline during this period, with some of them experiencing sharp declines of 30 and 40 percent, and a handful of others not reporting any graduates at all. As mentioned previously, major and multiple funding cuts for public education occurred across the nation after the Great Recession hit. Oklahoma's funding reductions in per pupil terms were among the largest cuts across states while the student population was growing at an accelerated pace (Leachman, Masterson, & Figueroa, 2017; Felder, 2016b). Because of funding constraints, Oklahoma school districts eliminated more than 2,800 teaching and non-teaching positions in 2016-17 alone (Oklahoma State School Boards Association, 2016), likely further dissuading people from entering the profession.

Between 2017-18 and 2020-21, there was a complete shift in graduation trends and the increased, on average, at an annual rate of 3 percent. The incipient positive outlook coincided with the two consecutive pay raises for public schools' certified personnel in 2017-18 and 2018-19 and continued into 2019-20 and 2020-21. Evidence shows that because of tighter job markets, post-secondary student enrollment tends to increase during recessions (Federal Reserve Bank of St. Louis, 2020), and that "teaching has historically been a... profession that sometimes attract more young people in time of crisis" (Goldberg, 2021b, para. 20). The recent increase in the total number of OSRHE graduates has not been a general pattern with only 1 in every 4 graduating institutions showing a positive trend; however, the drop observed for most of them was more than compensated for by the large increase in one of the top teaching preparation programs with the largest number of graduates.

Figure 36 reports the number of graduates from school counseling and school principalship programs during the last nine years. From 2012-13 through 2020-21, the number of students graduating with a school counseling degree increased by more than 50 percent (201 vs. 130), and the number of students completing a program that prepared them to lead a school grew close to 1.3 times (457 vs. 361). The trends, however, have not been consistent during this period. After an initial drop in 2013-14 and 2014-15 of 35 percent, the number of graduates prepared to take on the tasks of school principals rose somewhat continuously to a peak in 2019-20, which was 32 percent above 2012-13; the number slightly dropped in 2020-21. In turn, the number of college graduates who earned an education degree in school counseling steadily dropped between 2012-13 and 2017-18 before starting to grow and reach its highest level in 2020-21. Since 2017-18, the number of

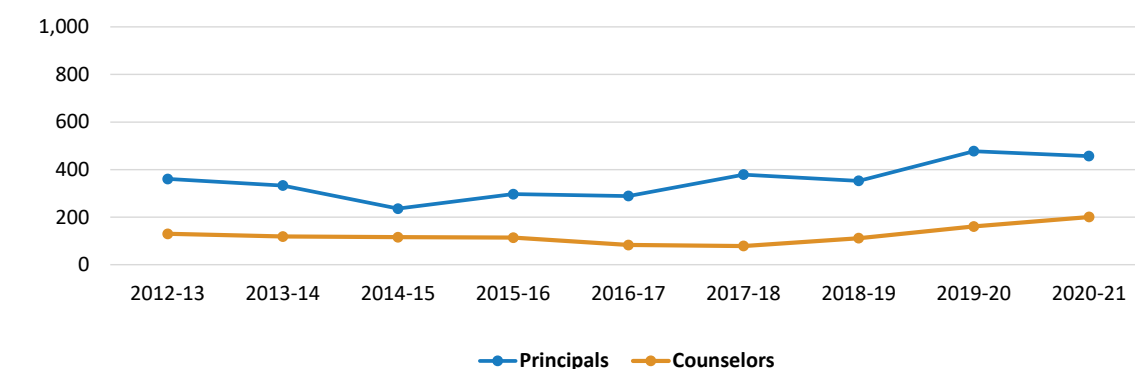
graduates from school counseling programs has consistently increased at a faster rate than the number of graduates from school principalship programs.

Figure 35: OSRHE graduates with an education degree: Bachelor's, Master's, Graduate, and Doctoral
2012-13 to 2020-21



Notes: Author's calculations based on data provided by the Oklahoma State Regents for Higher Education. Calculations include students obtaining a Graduate Certificate - Between Master's and Doctorate.

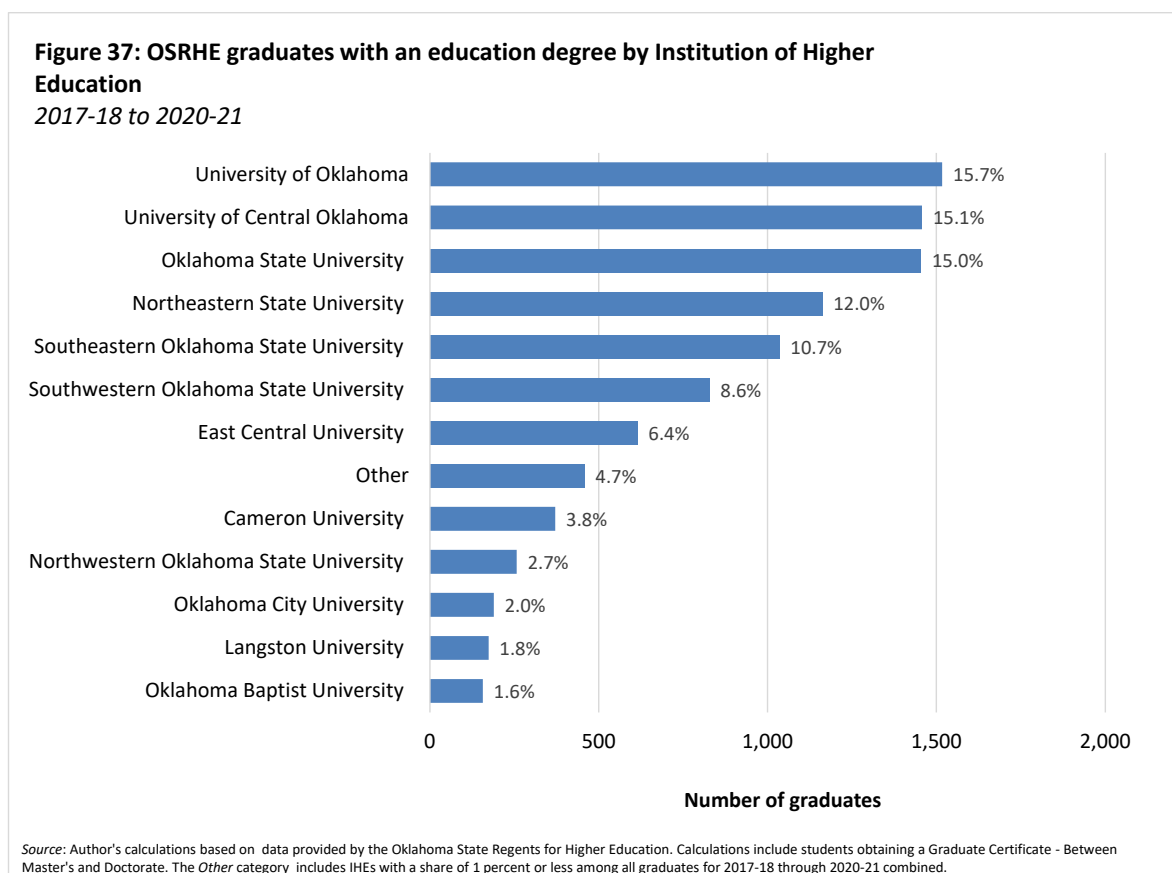
Figure 36: OSRHE graduates from Leadership and Administration and School Counseling and Guidance Services programs
2016-17 to 2020-21



Notes: Author's calculations based on data provided by the Oklahoma State Regents for Higher Education. Calculations include students who obtained a master's or doctoral degrees, or a graduate certificate (between Master's and Doctorate).

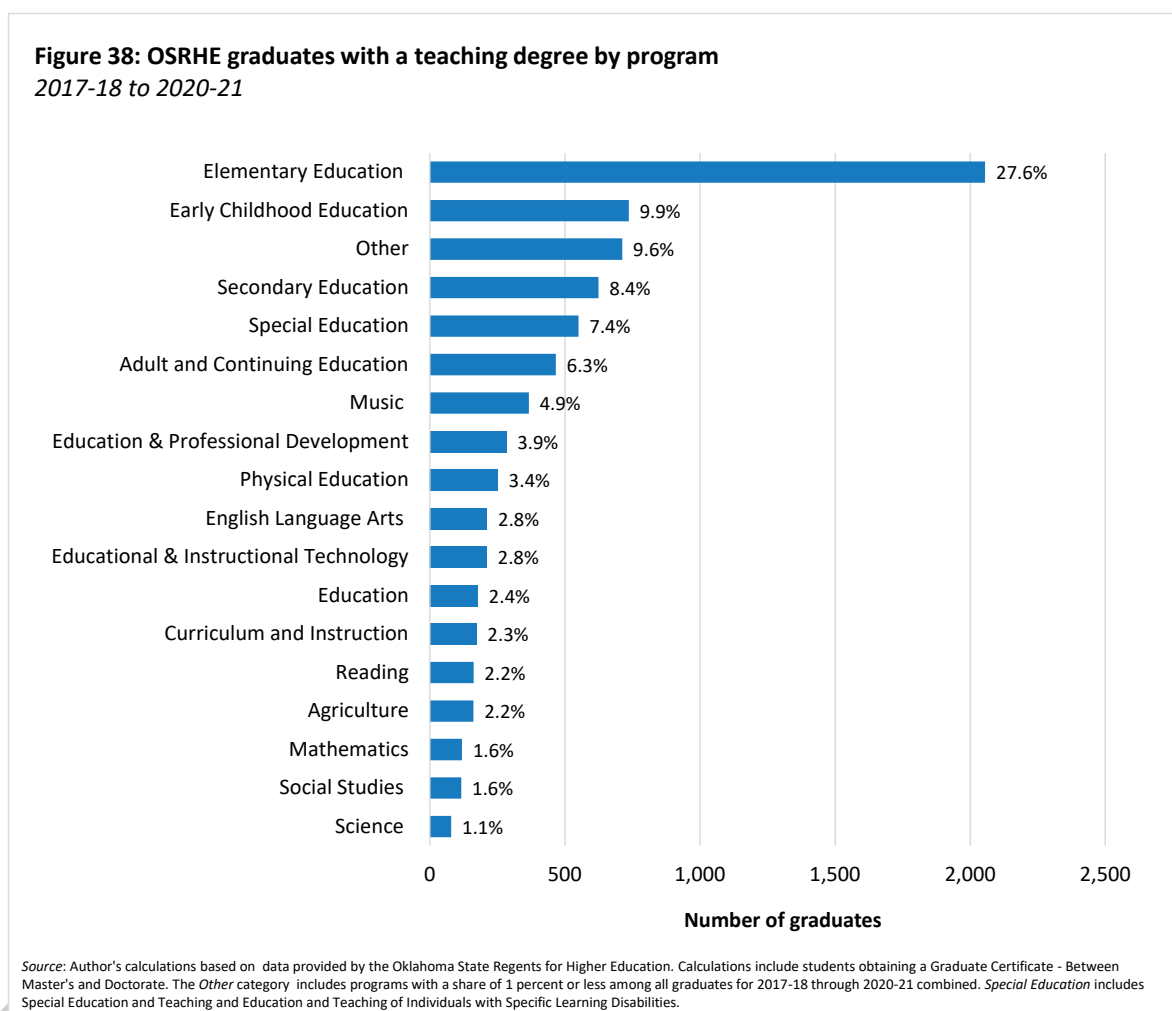
Figure 37 displays the share of each IHE among all graduates for 2017-18 through 2020-21 combined, which as we have seen is the most recent period when the total number of program graduates began to grow. More than nine in ten graduates (i.e., 92 percent) with an education degree come from programs in 10 IHEs: University of Oklahoma, University of Central Oklahoma, Oklahoma State University, Northeastern State University, Southeastern Oklahoma State University, Southwestern Oklahoma State University, East Central University, Cameron University, Northwestern Oklahoma State University, and Oklahoma City University. Although

few changes have occurred in the teacher education programs graduates' ranking in four years, one stands out among them (data not shown): Southeastern Oklahoma State University ranked 8th in 2017-18 (4 percent participation rate) and then it moved up seven spots and ranked 1st in 2020-21 (19 percent participation rate).



The participation rates of the different major fields of study among teaching degrees between 2017-18 and 2020-21 combined are shown in Figure 38. As in the past (Lazarte-Alcalá, 2018), Elementary Education and Teaching, Early Childhood Education & Teaching, and Secondary Education & Teaching continue to be among the top programs or specialties, accounting for 28, 10 and 8 percent of all graduates, respectively. When analyzing trends across years, however, different growth trajectories are observed across programs. For example, while the number of graduates in Multicultural Education, Education & Teaching of Individuals with Special Learning Disabilities, and Physical Education, Teaching and Coaching programs show the highest growth during the five-year period (129, 100 and 62 percent, respectively), the number of graduates completing Special Education & Teaching General, Education General, and Educational & Instructional Technology programs experienced a sharp drop (32, 24 and 22 percent,

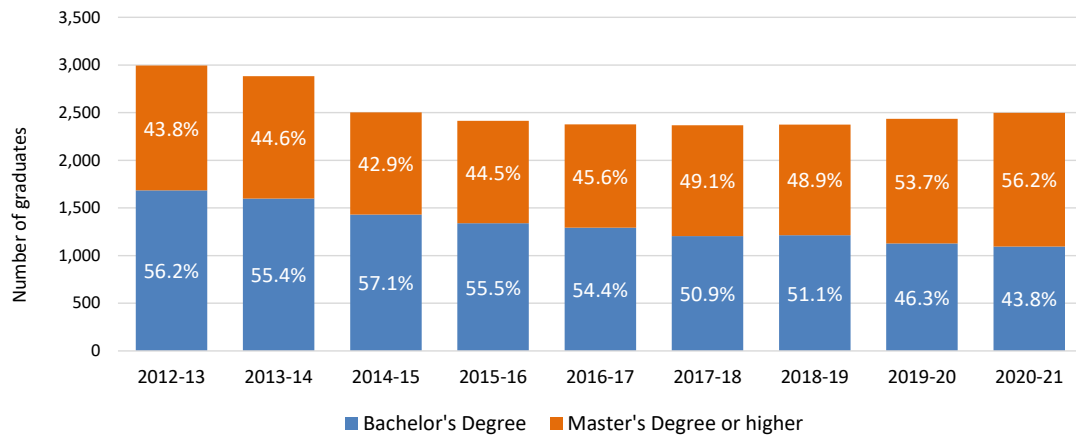
respectively). The *Other* category includes a wide variety of programs such as History, English as a Second Language, and Assessment, Testing & Measurement, with the number of graduates ranging from one to 72 for the four-year period.



In the last few years, the United States has seen a downward trend in the bachelor's, master's, and doctor's degrees conferred by postsecondary institutions in the field of education, in contrast to the overall increasing trend across all other fields (U.S. Department of Education, National Center for Education Statistics, 2020). In addition, during the same period, the participation rates of graduates with a bachelor's degree and graduates with a master's degree or higher remained stable at the national level at 65 and 35 percent, respectively. As Figure 39 illustrates, trends in Oklahoma's education programs resemble more and more the U.S. distribution of academic degrees in the field, with a persistent drop in the number of graduates with a bachelor's degree from 2012-13 to 2020-21 and an overall increase in the number of graduates completing a master's degree or higher in education studies during the same period. The combined effect has

produced increasingly larger participation rates of educators with higher degree levels than with bachelor's degree (56 vs. 44 percent, respectively in 2020-21)

**Figure 39: OSRHE graduates with an education degree by academic degree
2016-17 to 2020-21**



Source: Author's calculations based on data provided by the Oklahoma State Regents for Higher Education. Calculations include students obtaining a Graduate Certificate - Between Master's and Doctorate.

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Part III: Methodology

The Educator Supply & Demand Report is an effort to account for key aspects of the labor market for public school teaching in the state. The preparation of this document involved four different processes: a) data compilation about factors of educator supply and demand from multiple databases and officially recognized sources; b) data preparation for analysis, including data re-formatting, cleaning, matching and transformation, as needed; c) calculating summary statistics and testing hypotheses concerning relationships among relevant variables; and d) formulating assumptions and producing data for several core demand and supply indicators, including student enrollment, number of educators, ratio of students to teaching staff, class size, turnover, retention, new hires, and teacher preparation programs' graduates. In order to ensure consistency and comparability across years, all data available were assessed, updated and revised during the analysis of the past dynamics and trends over time of the teaching workforce. In the following paragraphs, these processes are described for the demand- and the supply-side factors.

Demand Data

Enrollment

Two sets of data were used in the calculations involving student enrollment: educational and population data. Data on preK-12 historical enrollment (i.e., 2012–13 through 2020-21) came from the Oklahoma State Department of Education's annual reports, known as the October 1st enrollment dataset. The information for population statistics came from the Oklahoma State Department of Health (OK2SHARE). Vital statistics of births, including aggregate numbers and the breakdown of the population by age, were accessed for dates and years that coincided with those of the educational data.

During the analysis process, enrollment numbers were summarized in ratios by grade, forming the time series that allowed the detection of data trends. The annual enrollment ratio for students in pre-kindergarten was estimated using the number of children enrolled in pre-kindergarten as a proportion of total children born five years earlier.

The racial, ethnic, low-income background, and English learner's status distribution of public school students were used to aggregate individual observations into meaningful categories, to present and discuss comparisons among them and to detect trends over time. Relevant school characteristics were included as additional variables and used for transversal analysis across the

different demand and supply indicators, including school locale, level, and geographic classifications.

Race & Ethnicity

Students' self-reported race and ethnicity data were recoded into six categories: American Indian or Alaskan Native, Asian or Pacific Islander, Black or African American, White, Hispanic, and Two or More Races. Note that race categories exclude individuals of Hispanic ethnicity who are classified as such regardless of race.

Poverty

This report uses the percentage of students eligible for free or reduced-price lunch under the National School Lunch Programs (measuring school poverty) and the National Center for Education Statistics' classification of schools into one of four categories: High-poverty (more than 75 percent of the student population is eligible for free or reduced-price school meals), mid-high poverty (between 50.1 and 75 percent of the student population is eligible for free or reduced-price school meals), mid-low poverty (between 25.1 and 50 percent of the student population is eligible for free or reduced-price school meals), and low-poverty (25 percent or less of the student population is eligible for free or reduced-price school meals) (National Center for Education Statistics, 2019).

English Language Learners

Students who are identified as English language learners (ELLs) in Oklahoma are placement-tested with an appropriate English language proficiency assessment (i.e., WIDA assessment), and found to have limited proficiency in English (Oklahoma State Department of Education, n.d.). The yearly numbers of ELL students are based on a headcount of all enrolled students with such status each year, regardless of any individual change in status (e.g., enter to or exit from the program).

School Characteristics

Geographic Regions. All 77 counties in the state, and hence school districts and schools, are grouped geographically into five major areas designated as: Central, Northeast, Northwest, Southeast and Southwest. Appendix A provides a list of counties by region.

Virtual Status. Public schools that offer exclusively virtual instruction are assigned a status of *charter virtual* or *full-time statewide virtual* schools in the OSDE data systems, and each school offers multiple school levels. Oklahoma has the following six virtual charter schools as

authorized by the Statewide Virtual Charter School Board: Epic Charter School, E-School Virtual Charter Academy, Insight School of Oklahoma, Oklahoma Connections Academy, Oklahoma Information and Technology and Oklahoma Virtual Charter Academy (Virtual charter schools authorized by the Statewide Virtual Charter School Board, n.d.). Usually, when data are broken down by region, locale or level, virtual charter schools are treated as a separate category in this report.

School Site Level. The instructional level of each school comes from a derived variable in the OSDE data systems that combines the lowest and highest grades offered. The six instructional levels are included under the *site level* variable: *elementary* (prekindergarten through grade 8), *junior high* (usually beginning in grade 7 and ending with grades 8 or 9), *middle* (usually beginning with grades 5 or 6 and ending with grades 7 or 8), *high* (frequently beginning with grades 9 or 10 and ending with grade 12), *charter* (public schools that are allowed greater flexibility for greater accountability), and *charter virtual* schools. Often, the analysis undertaken for this report uses the site level information to regroup schools into one of the following three categories: *elementary*, *secondary* (middle, junior and high school site levels) and *virtual charter*.

Also, data cleaning was undertaken to ensure accuracy and consistency across years; however, no filtering was performed in any of the teacher data tables. Due to changes in district names occurring over the years, data were normalized by using the information from the most recent year. Changes in school district names do not affect/modify any of the results obtained as none of the calculations or analyses conducted involved the name of the district.

School Locale. The report uses the National Center for Education Statistics' (NCES) locale framework that classifies the type of area where a school district/school is located into 12 categories or locales based on population size or proximity to populated areas (Geverdt, 2015). The framework is based on the U.S. Census Bureau's urban/rural definitions, and these four basic types are used for the analyses, discussions and interpretations: city, suburban, town and rural.

Workforce

Teaching assignment(s), job classification, and information about the district and school(s) where public school educators are employed were obtained from the annual reports of the Oklahoma Cost Accounting System (OCAS). Annual data are provided by school districts in the *Personnel Report* and entries in the original tables relate to a particular record describing, for example, an assignment or position, the site level and associated full-time equivalent (FTE)

information; multiple rows per educator usually account for multiple positions or pay types. Personnel data were accessed for the school years 2012-13 through 2020-21. In addition, certification records and teaching assignments were accessed from the Oklahoma Educator Credentialing System and matched to personnel data to create single, combined files for each year. It is important to note that data for 2020-21 may come from different points in time for different sections of the report as the source tables are periodically updated until several weeks after the school year is over. Hence, some of the results included for 2020-21 used preliminary data; the associated figure(s) or table(s) clearly note the date each file was last updated.

Based on the school personnel raw data for each year, new variables were created, and others recoded. The unique identifier included in the original files –which is automatically allocated to each educator who is granted a teaching certificate by the Oklahoma State Department of Education, Teacher Certification office– was used to create one row per record (i.e., educator) and to match data across systems.

Primary Position. For the sake of comparability and ease of interpretation, information about the educator’s job, subject and site-level were reviewed and recoded into a smaller and more meaningful number of categories that comprise the new *primary position* variable. The creation of this variable followed the similar collapsing rules used in previous studies (Lazarte-Alcalá, 2018; Berg-Jacobson, A., & Levin, J., 2015), and the 25 categories configured are: middle school (MS) arts & humanities; high school (HS) arts & humanities; MS business & computer education; HS business & computer education; MS career & technology education; HS career & technology education; elementary (except prekindergarten and kindergarten); English as a second language; MS industrial arts/technology education; HS industrial arts/technology; MS language arts; HS language arts; MS mathematics; HS mathematics; prekindergarten and kindergarten; MS science & STEM; HS science & STEM; MS self-contained; HS self-contained; MS social studies; HS social studies; MS world languages; HS world languages; MS other; HS other. A detailed list of the subject, job, and site-level codes grouped under each position can be found in Appendix C.

Using the maximum full-time equivalent (FTE) value(s) as the reference variable, each year’s data were aggregated to the individual-level and the primary position of each educator was identified. The teacher number, or TNO column, included in the original data tables was used as the unique identifier for each educator. Two rules were applied in defining the primary position for those educators with an overall FTE value distributed across multiple assignments: 1) keep the

highest FTE, when one exists; or 2) keep the first row of information for those individuals with a similar FTE value.

Pupil-educator Ratios. A secondary analysis of combined data on school personnel, teaching assignments, and/or enrollment, stored in different datasets, was involved in the computation of pupil-educator ratios. To ensure the correctness of the matching process when merging tables across datasets, identifier variables (e.g., TNO; county, district, and school codes) common across them were used. In addition, several rounds of data cleaning and quality checks were performed to maximize accuracy on all the data available for analysis. For example, when inconsistencies in school/district coding across datasets were found, the codes in the personnel file prevailed. When the inconsistencies were across years, the codes from the most recent year were applied.

Pupil-teacher ratios were produced by primary position, school instruction level, locale, poverty, and year. Pupil-educator ratios for school counselors were also calculated and compared across schools. The annual numerator/denominator comparisons used enrollment headcount data for prekindergarten, kindergarten, and grades 1 through 12 –excluding non-graded students and out-of-home placements–, and the total number of teachers/counselors included in the personnel file. A few outliers were removed from the analysis, which were the result of the reporting of all teaching staff under one or some, but not all, of the schools operated by a charter organization; the conclusions were qualitatively similar to the results found when using all data.

Class Size. A closely related variable to the pupil-educator ratio is class size or the number of students a teacher has in the classroom. The average class size for all public school teachers and by primary position were calculated for 2020-21 using teaching assignments and enrollment data.

Turnover

Within the context of this report, turnover is defined as the number of educators who leave public teaching entirely between two consecutive years plus those educators who move to another school, into a teaching or non-teaching position, or stay in the same school but in a non-teaching position during the same timeframe. Six categories were used to explain and classify the educator workforce, including turnover: 1) *stayers* includes individuals working in the same position at the same school within two consecutive years; 2) *leavers* comprises educators who were employed by the public school system in the first year, but not in the second; 3) *movers-1* consists of all individuals working the following year in a non-teaching position and different school; 4) *movers-*

2 encompasses educators working in a non-teaching position, but in the same school; 5) *movers-3* includes teachers working in a different school; and 6) *New hires* are defined slightly differently depending on the educator role: new teacher hires are those educators who have no previous teaching experience; new counselor or principal hires are defined as those educators who have not served in that role in the previous five years. The position and school data in the first year were used as the reference information for the leavers' and movers' categories.

Following the current approach to measure turnover, the metric is further disaggregated into four components: retirement, voluntary preretirement, involuntary preretirement, and movers (Meyer, Espel, Weston-Sementelli, Melton, & Anguiano, 2020; Carver-Thomas & Darling-Hammond, 2019; Carver-Thomas & Darling-Hammond, 2017). When reporting school personnel records, school districts are asked to voluntarily choose and report from various options, the most important factor influencing each teacher's decision to leave. More than one-fourth of teacher turnover in 2019-20 and 2020-21 lacks data on the reasons for leaving; although smaller in magnitude, counselors' and principals' turnover also face similar missing data issues. Caution is warranted in data interpretation.

Retention

Retention rates were calculated as the cumulative percentage of beginning educators teaching in consecutive years, including after one, three, and five years on the job. A total of eight cohorts comprised of more than 30,000 beginning teachers were included in the one-year and the first five years retention analyses.

The level or administrative unit at which an educator moves or stays produces measurements of retention that may describe different educator behavior, answer different questions, and in turn suggest specific strategies for increasing it (Bailey, Hanita, Khanani, & Zhang, 2021). Hence, we used two complementary metrics to measure retention: 1) The percentage of educators who remain teaching over a certain number of years in at least one of their initial schools; and 2) the percentage of educators who continued to teach over a certain number of years in any Oklahoma public school.

Individual-level historical certification information for the period between 2015-16 and 2020-21 was used for the after two- and after three-year retention rate analyses. All educators with at least one valid certificate in any given year, employed in the Oklahoma's public schools and who have complete records across systems were included in the computations.

Similar approaches to measure and evaluate the retention of school counselors and principals were implemented, but for slightly shorter timeframes.

Supply Data

Workforce

Personnel data for the school years 2012-13 through 2020-21 were used and combined to produce a single record per educator that included the job code(s), pay type(s), FTE data, information about the district and school(s) where educators were employed, the school type and level. Calculations to determine the size of the workforce in both headcount and FTE terms encompassed staff who were paid a base salary (i.e., employees of brick-and-mortar schools) or contracted services (i.e., employees of statewide virtual charter schools), and had complete records across systems. This report used editing procedures to complete FTE missing data, as necessary. Less than 0.5 percent of all records in 2020-21, for example, were imputed using the average values across all data points available for the year.

Job Diversification. Job diversification among educators within the public school system was measured by considering multiple factors, including additional sources of income from working in multiple schools and/or from taking multiple jobs throughout the school year. The diversification of sources of income using the job code as the variable of reference included only positions that are relevant to each of the educator roles included in the report (i.e., teachers, counselors and principals). It is beyond the scope of this work to address jobs outside the school system, whether they are in the education field or not.

Age. Consistent with similar reports published in the past (Lazarte-Alcalá, 2018; Berg-Jacobson & Levin, 2015), the age of educators was calculated based on the date of birth information included in the school personnel data tables. The educator's age was calculated by subtracting the reported year of birth from the cut-off date of October 1st in each school year. The resulting values were grouped into the following five categories: age 31 or younger, 32-53, 54-59, 60-61, and 62 or older. In addition to the overall distribution of teachers by age group, the age percentage distribution by supply factor was computed for 2019-20. The reasons for including 2019-20 instead of 2020-21 data are twofold: (1) 2020-21 was a highly atypical school year not suitable for comparison with previous years; and (2) the relatively high proportion of incomplete information across data systems for new hires in 2020-21—including demographic characteristics—who are exempt from certain certification or data reporting requirements.

Race & Ethnicity. The same categories used to describe the race and ethnicity of students were also used to identify the percentage distribution of teachers across racial/ethnic groups: American Indian or Alaskan Native, Asian, Black or African American, White, Hispanic, Pacific Islander and Two or More Races. As before, race categories exclude individuals of Hispanic ethnicity who are classified as such regardless of race. Using such classification, the student-to-teacher, student-to-counselor and student-to-principal racial and ethnic gaps were obtained for each minority group for/from 2016-17 and/to 2020-21. As was done for the comparison of the age percentage distribution by supply factor, data for two cohorts of teachers between two time periods were used to observe any changes in the race & ethnicity composition of each supply factor over time; once again, 2019-20 instead of 2020-21 data were included for the reasons previously explained.

Experience. Two OSDE administrative datasets were used to obtain a snapshot of the extent to which experienced educators teach Oklahoma public school students: personnel and certification. Across years, experience information in the data source is available in the form of eight variables for technically all educators hired annually by school districts, except charter school teachers and adjunct teachers for whom such information is not tracked: 1) teaching experience in Oklahoma; 2) teaching experience from out-of-state school(s) (values above five years are capped); 3) total teaching experience from out-of-state school(s) (all observed years of out of state experience are included); 4) military experience (values above five years are capped); 5) total military experience (all observed years of military experience are included); 6) teaching experience from out-of-the country school(s), (values above five years are capped); 7) total teaching experience from out-of-the country school(s); and 8) total experience. The last variable in the list of the eight previously detailed was used in the configuration of the experience metric, and only in a few cases adjustments were necessary to the total experience value. Such adjustments occurred when discrepancies between the total experience value and the sum of all values across the remaining columns with experience data were found. For payment and service record purposes in the state (i.e., Oklahoma Teachers Retirement System), the total years of approved out-of-state, out-of-the country and military experience are each capped at 5 years (Oklahoma State Department of Education, 2018).

Experience data were analyzed for the period between 2016-17 and 2020-21 and across all the educator role groups studied. i.e., teachers, counselors and principals. During data cleaning and

preparation for analysis, missing records for any of the experience variables were completed with information from previous years, as appropriate. The breakdown of the length of educator experience follows the National Center for Education Statistics' disaggregation, adjusted to the Oklahoma definition of career teacher: no experience, 1–3 years, 4–9 years, 10–14 years, and 15 or more years. In addition to the data notes described in the subsection *Workforce* above, calculations for the experience metric included full- and part-time educators, who may or may not have had multiple roles within the school.

Qualifications. To work as a professional educator in Oklahoma, aspiring individuals must obtain a certification from the Oklahoma State Department of Education, Teaching Certification office. Several pathways exist to obtain a certificate in the state, and all require specific prerequisites listed in the OSDE website (<https://sde.ok.gov/teacher-certification-paths>). Historical, individual-level certification information for the period between 2016-17 and 2020-21 was pulled separately for teachers, counselors and principals. Depending upon the level of the certificate, the validity period can be for one (e.g., provisional certification in special education), two (Teach for America), or five years (e.g., standard). The certification data pull was performed using parameters for the *effective date* and *expire date* fields that would maximize the size of the sample for each school year, i.e., filters that would most closely identify all valid certificates.

Considering previous and similar reports (Lazarte-Alcalá, 2018; Berg-Jacobson & Levin, 2015), the certificate type variable was organized into a smaller number of categories: *Alternative*, *emergency*, *multiple certificates*, *non-emergency & emergency*, *paraprofessional*, *provisional*, and *other*. The *alternative* and *paraprofessional* certificate categories included both the initial and standard options in their respective program paths. The actual number of categories varied depending on the sample size and participation rate across certificate types of a specific analysis. For teachers, for example, the *other* category includes SPED provisional, Teach for America, temporary (only for 2020-21), and provisional certifications. Appendix D has the complete list of original and new certification codes.

In order to get a better understanding of the relevant characteristics of educators in relation to their qualifications, certification data were matched and merged with personnel data at the state level for teachers, school counselors and principals. Combined analyses encompass retention of beginning educators by type of certificate, and the distribution of certificate type by supply factor.

As already mentioned, all calculations included educators with complete records across data systems.

According to the competency-based licensure and certification system (Oklahoma State Department of Education, 2015), educators can be approved for multiple subject areas by passing the appropriate test(s) and/or fulfilling specific requirements, which may include evidence of completing the appropriate program. During the application/renewal process for a teaching certificate, individuals can request the addition of one or more areas to the certificate. All the subject areas included in the raw data were used to report their distribution in 2020-21. Subject areas with a participation rate of 1 percent or higher were included in the analysis as separate categories, and those with a rate of 0.5 percent or less were combined into one category, i.e., other. The list of all subject areas that comprise the other category and their respective percentages for 2020-21 are listed in Appendix B.

Supply Factors. In order to analyze the individual components of educator supply, each year between 2012-13 and 2020-21 for teachers, and between 2015-16 and 2020-21 for counselors and principals, educators in the workforce were identified as either *new hires* or *stayers*. For the percentage distribution of teachers by factor analysis, year-over-year comparisons were implemented. Due to the unique circumstances of the 2020-21 academic year, data for 2019-20 are presented for some analyses instead in order to measure change over time. A brief mention to data in 2020-21, however, is regularly offered. It is important to note that some data are mentioned as a reference in this document but are not shown in the figures or tables. These and all similar data are available upon request.

Stayers. Educator stayers, also referred to in the literature as re-entrants, are defined in this report as individuals who work in the same position at the same school in two consecutive years. In addition to using the measurement of educator stayers as a key component in the turnover and retention analyses, the trends and composition of educator stayers are also used to compare demographic and qualification characteristics of stayers vs. new hires. When the data were broken down by subcategories for each supply factor, including age, race & ethnicity, years of experience, or certificate type, only those individuals with a complete experience record were included in the calculations.

New Hires. The second component in educator supply is comprised of certified educators who were not teaching the previous year. As mentioned before, new hires are defined slightly

differently in this report depending on the role of the educator. New teacher hires or first-year teachers are those educators who have no previous teaching experience, regardless of when they earned their degree. To improve measurement precision while computing average values, and for practical reasons, new counselor or principal hires are defined as those educators who have not served in that role in the previous five years. Frequently, educators who work for virtual charter schools or as adjunct teachers do not have some demographic information, such as race and ethnicity, as well as certification data. As before, only records with complete data on a necessary variable have been examined.

Graduates of Educator Preparation Programs. A fundamental source of educators for the new hires group are recent graduates of educator preparation programs, or graduates from prior years, some of whom could have some teaching experience. Data from the Oklahoma State Regents of Higher Education (OSRHE) were used to explore trends in the number of graduates with an education degree and their distribution among Institutions of Higher Education (IHEs), major fields, and academic degree from 2012-13 through 2020-21. Data for graduates from school counseling and educational administration and supervision programs are presented separately.

For consistency with the report published in 2018 (Oklahoma Educator Supply & Demand Report), the number the students completing teacher preparation programs was calculated using all graduates with a bachelor's degree or higher, including graduate certificates. The distribution of graduates with a teaching degree by program or major field of study use the original categories provided in the data files.

When the school counselors' and principals' pipeline was examined, OSRHE graduates from two programs are involved: Leadership and Administration, and School Counseling and Guidance Services.

Statistical Significance

Statements in the text describing differences across groups frequently indicate that statistical testing was performed. Differences across subgroups (e.g., stayers vs. new hires) and across years (e.g., 2019-20 vs. 2020-21) were tested using cross-sectional and/or time-series data. Only those differences that were determined to be statistically significant at the 0.05 level, using two-sided significance tests (z-tests), are reported. The distribution of several characteristics of the teaching workforce, or variables determining its level, was compared across subgroups, including enrollment, pupil-educator ratios, turnover, retention, and student-to-educator racial/ethnic gaps.

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Appendix A

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Appendix B

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Appendix C

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Appendix D

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